THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

Vol. 74: No. 13. *New York, Thursday, September 29, 1904.* $5.00 a Year, including Postage. Single Copies, 15 Cents.

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THE IRON AGE

THURSDAY, SEPTEMBER 29, 1904.

The Mesta 40-Inch Slabbing Mill.

In the National Tube Company's plant at McKeesport, Pa., a new 40-inch slabbing mill has been installed, which is remarkable for its size and the novel features in its construction. The complete equipment, as shown in Fig. 2, including the direct connected engines, was manufactured by the Mesta Machine Company, Pittsburgh, Pa. This mill is designed to take ingots 56 inches wide and 36 inches thick of different lengths and to reduce them to a width as narrow as 14 inches and to any thickness within reasonable limits. It is of the two-high reversing type, having two horizontal steel rolls 32 inches in diameter and 65 inches long. The housings for these rolls are made of air furnace iron and weigh about 50 tons each. The horizontal rolls are driven by a pair of 46 x 60 inch piston valve reversing engines geared 5 to 7. The gear on the engine shaft is of the step tooth design, machine molded, and is made of acid open hearth steel. The gear on the jack shaft is a steel rim, which is also machine molded, and has a cast iron center.

The distinctive feature of the mill is that it has only two vertical rolls, whereas it is customary to use three and sometimes four. A particular advantage peculiar to the method of driving is that large miter gears are used, even though it is possible to bring the rolls within 14 inches of each other to roll narrow slabs. To secure the advantages afforded by large miter gears, other designs introduce between the rolls carrying the miter gears one and sometimes two idle rolls, so that narrow slabs may be rolled. In some cases these inner rolls are driven by spur gears, but as these cannot be larger than the diameter of the rolls they wear out rapidly. If the inner rolls are not gear driven they often slip on the driven roll so that it is impossible to make much of a reduction at a single passing of the ingot. With this mill a large reduction may be made on the ingot or slab at each pass. The vertical rolls are made ragged or rough on the surface, similar to the rolls of the horizontal mill, to secure better contact with the ingot and prevent slipping. In slabbing mills, where but little reduction in the width is possible, it is necessary to have a special ingot for almost every width of slab. These require a great number of ingot molds, stools and cars, whereas with this mill it is possible to reduce the number of ingots to a very few, since it is capable of making heavy reductions in the width of the ingot. Steel worked in this manner is also of a better quality.

The vertical steel rolls are driven by a pair of 36 x 48 inch piston valve reversing engines. The housings for the vertical rolls are made of air furnace iron and weigh about 70 tons each. One of these is shown in Fig. 1 mounted on the work base of a large boring mill which is engaged in reaming bolt holes. Power is transmitted from the engine to each of the vertical rolls, first through a pair of straight tooth gears and then through a pair of very large machine molded steel miter gears, as may be seen in Fig. 2, and also in the line drawings, Figs. 3, 4 and 5. The miter gears are 52 inches in diameter. To allow of such large gears the vertical miter gears are mounted on two separate shafts, one being placed at a sufficient distance below the other to allow the horizontal miters to overlap when the rolls are close together. The shafts being short, with a bearing at each end, are more rigid, and another advantage is that one may be removed without interfering with the other.

Fig. 3 shows a sectional end elevation of the mill, Fig. 4 a longitudinal vertical section on the plane of the

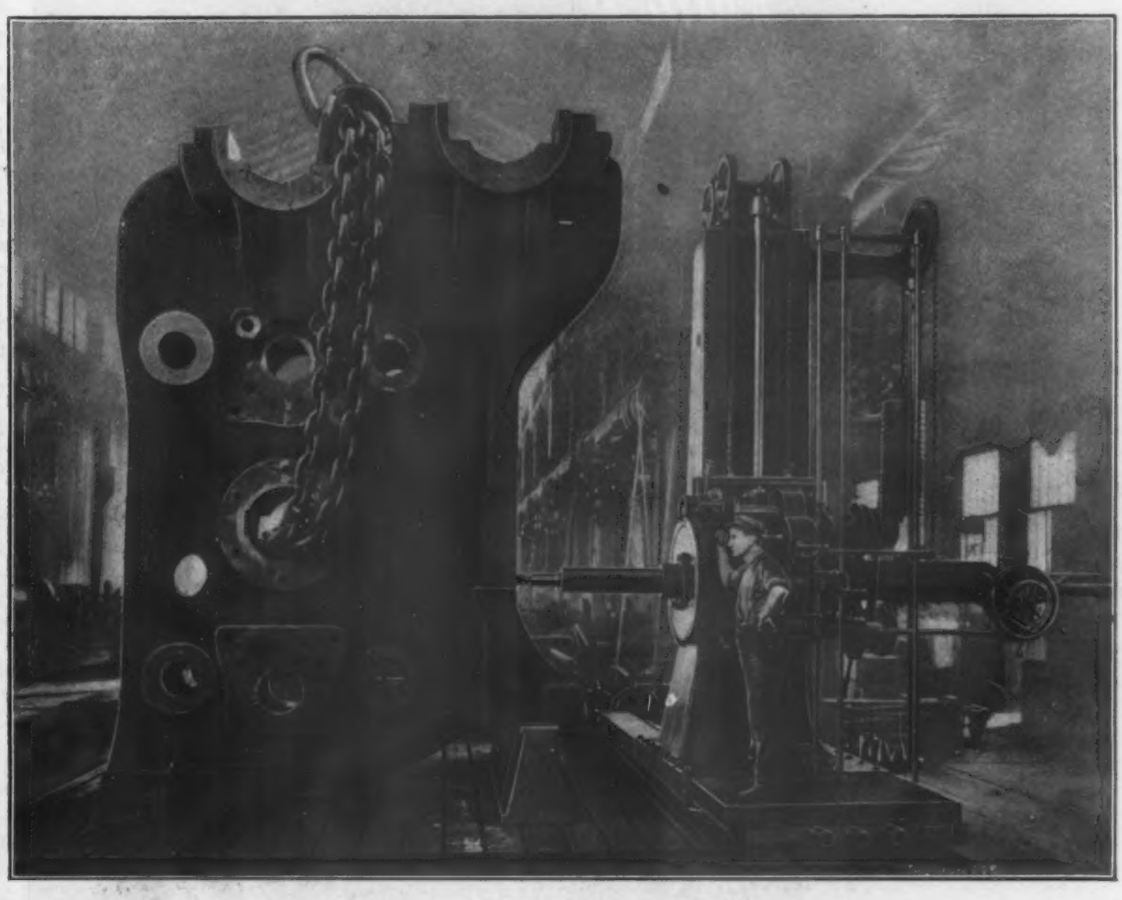

Fig. 1.—One of the 70-Ton Housings for the Vertical Rolls.

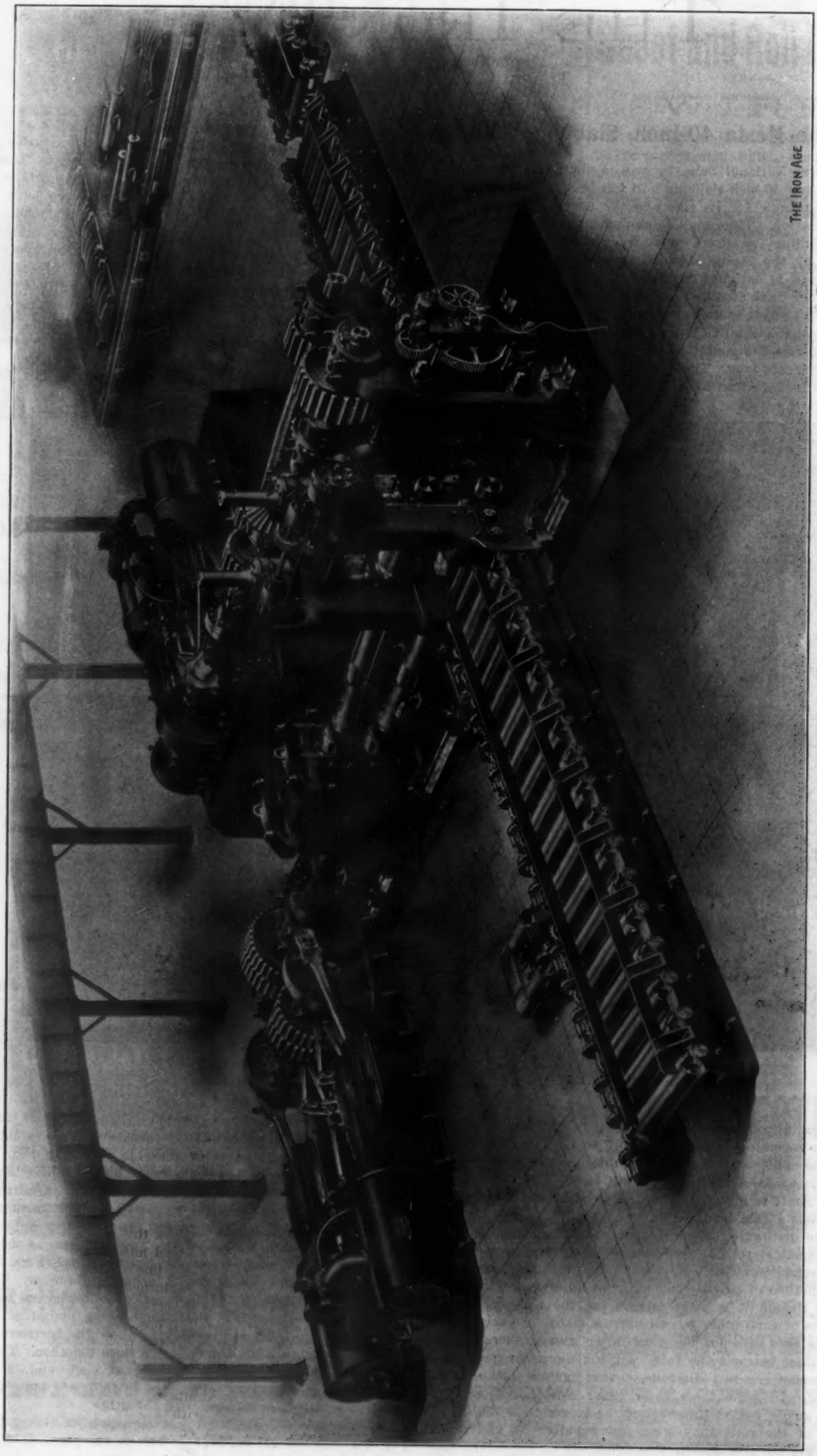

Fig. 2.—The 40-Inch Slabbing Mill Complete, with Two 40 x 60 Inch Engines Driving the Horizontal Rolls and Two 36 x 48 Inch Engines Driving the Vertical Rolls.

vertical rolls, and Fig. 5 a top plan view. Referring to Fig. 3, A and A represent the horizontal rolls of the mill, which are mounted in end housings B, these being of the usual form. The vertical rolls, C and C, Figs. 3 and 4, are carried in bearings, which slide in guideways cut in the transverse rest bars extending between the end housings, as shown in Fig. 3. The housings are cast with inwardly projecting ledges, *a* and *a*, Fig. 4, upon which the upper rest bars are supported, while the lower rest bars are carried on the foot of each housing. The vertical rolls are supported upon thrust plates, *b* and *b*, carried in rocking step bearings, each bearing being loosely mounted at the end of a lever, the rear arm of which is engaged by the rounded lower end of the bolt *c*, extending into the lower end of the sliding traveler D. By adjusting the nut of the bolt the vertical roll may be raised or lowered.

The vertical rolls are driven by a gearing connection

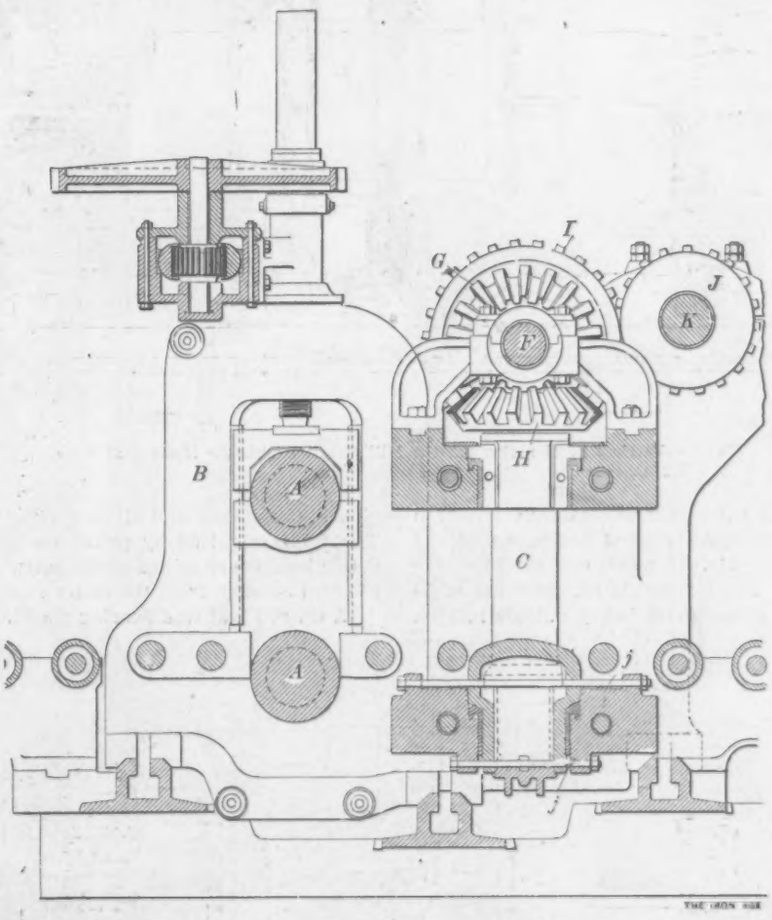

Fig. 3.—Vertical Section through the Center of the Mill in a Plane at Right Angles to the Horizontal Rolls.

at the top from the two shafts, E and F, whose axes are in the same vertical plane, but on different levels. The outer end of each shaft is carried in a bearing in the near end housing, while the inner end is carried in a stationary bearing supported upon brackets extending inwardly from the rest bars. The shafts E and F are short, and being supported at both ends are in no danger of bending or getting out of alignment. Each of these driving shafts is splined and carries a sliding miter gear, G, the hub of which has a surrounding collar, *d*, secured to the traveler D. The miter gears G intermesh with other miter gears, H, secured to the upper projecting ends of the trunnions on the driven rolls. The gears H on these two rolls are placed as before stated, one below the other and overlapping, so that the rolls may be brought close together. The shafts E and F are provided with spur gears, I, which are driven by gears J, secured to the shaft K, extending between the housings in front of the shafts E and F. One end of this shaft K is connected by a coupling to the shaft of the engine which is mounted on an elevated foundation, as seen in Fig. 2.

The travelers D have side flanges or projections which rest upon guideways on the top and bottom rest bars, sliding upon them when the vertical rolls are adjusted laterally. The travelers are moved in or out by screws, *e*, *e*, *e* and *e*, which extend through the housings and are rotated by spur gears, *f*, *f*, *f* and *f*, intermeshing with intermediate gears, G and G. Each traveler is held against its adjusting screws by a pull back plunger, *h*, Fig. 4, moving in a single acting hydraulic cylinder in the end housing. The plungers have outer cross heads with side rods which are bolted to the travelers. To strengthen the rest bars at the middle points they are bolted together by upper bolts, *i* and *i*, and lower bolts, *j* and *j*, which extend through spacing blocks. The lower spacing block is curved on its upper face, as shown in Fig. 3, to guide the slab while it is passing between the vertical rolls.

Fig. 6 shows the mill on the erecting floor in the shops of the builder and gives perhaps the best idea of its size. The engines, as before stated, were also built by the Mesta Machine Company, so that the complete equipment has the advantage of harmony in design and action such as cannot easily be attained when the associated parts are furnished by different builders.

A new electric automobile has been brought out in France by the Electromotion Company of Paris. It differs from the usual construction of machines of its class in employing slow speed motors directly connected to the axles instead of high speed motors operated through chains or gearing. The current is supplied from accumulators, and it is said that there is a saving of from 20 to 30 per cent. by avoiding the loss of energy in gear friction. The car is capable of five speeds, ranging between 4½ and 19 miles an hour. Its operation is said to be noiseless and smooth when stopping, starting or changing speeds.

The contract for the new School of Mines to be erected at Columbus, Ohio, was awarded September 15 to John Hiña of Columbus. The building will cost approximately $85,000.

St. Louis World's Fair Notes.

Lumbermen and others using wood working machinery have found the exhibit of the H. B. Smith Machine Company, Smithville, N. J., in Block 4 of Machinery Hall, of great interest. It is the largest exhibit of this class of machinery, occupying a space of some 5000 square feet, in which are shown 35 machines of latest design, embodying all improvements up to date. A number of machines are electrically driven. Among the latest new machines which are shown are a new extra heavy outside molder, tenoning machine has a table fitted with a peculiar style of roller bearing, allowing it to move easily and accurately. The extra heavy cabinet surfacer which is exhibited will plane a width of 27 inches on stock as thick as 7 inches. It is fitted with sectional feed rolls and sectional chip breakers, so that several narrow pieces may be planed at one time and all be reduced to a parallel gauge. The table is raised by power on inclined planes. The cutter head bearings are of the patent clamping style, and the feed is taken from the cutter head by open belts.

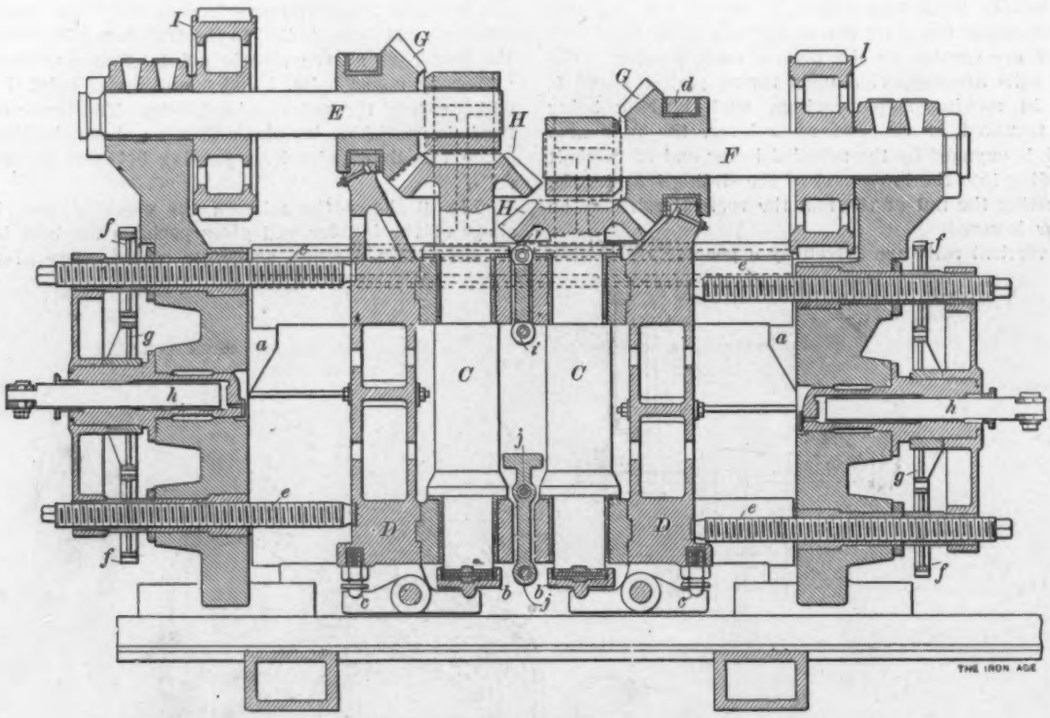

Fig. 4.—Vertical Section through the Mill Parallel with the Horizontal Rolls.

A six-roll fast feed flooring machine shown will handle triple drum sander and fast feed flooring machine, double and single end tenoning machines, and cabinet surfacers. The double end tenoning machine is especially adapted for working hard wood and heavy pieces of stock, such as are used in the manufacture of furniture and railway cars. The machine has double heads so as to cut long tenons, and will handle stock of any length between 4⅝ inches and 6½ feet up to 28 inches wide between shoulders. The cope heads are powerfully driven and are mounted on the ways, differing in this respect from the ordinary double end tenoning machines. The single end work up to 6 inches in thickness and as wide as 12 inches. The under cutter head is placed next to the upper or thicknessing head, so as to work both sides of the board before it is acted upon by the side heads, the advantage being that it enables the operator to work the flooring with the face side down. All of the adjustments are made from the working side of the machine, and the clamps for holding the heads are compensating. The machine is also fitted with a belt compensating device, which by the turning of a crank tightens all the cutter head belts when cutting hard wood or slackens them when

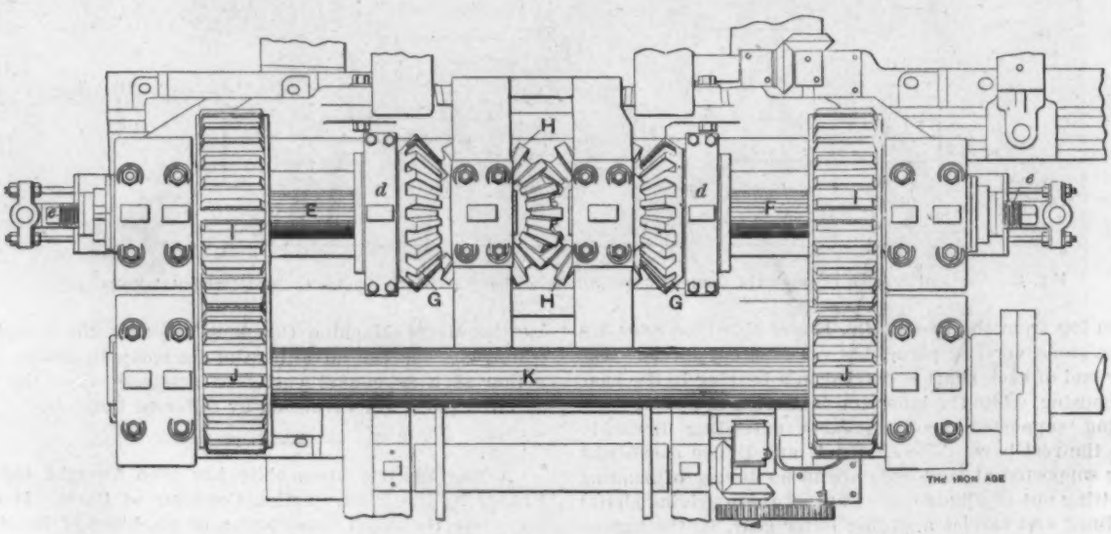

Fig. 5.—Plan View of the Mill, Showing Gearing for the Vertical Rolls.

cutting soft wood and making light cuts, thus reducing wear and tear on the machine and belting.

The triple drum sander differs from others in that the sand drums are over the work, the latter being fed by an endless belt. This feed bed is composed of lugs joined together and faced with rubber, so as to present a slightly yielding surface, allowing the entire bed to be filled with work, even if the pieces are small and of slightly different thicknesses. The table is raised and lowered by power and has hand adjustment for fine setting. The drums assist in lifting the dust into an overhead hood, from whence it is withdrawn by the usual exhaust fans. Two of these drums oscillate, balancing one another, and

mortiser and borer with combined table and rack and pinion feed. It is especially adapted for working hard wood. The smaller reciprocating mortiser is intended for lighter work. The new quadruple mortising and boring machines will work two stiles at a time, mortising one end and boring the other, or it will bore four holes at a time.

Several styles of sawing machines are exhibited, among them a large surfacer resawing machine fitted with a 48-inch segmental saw, a 36-inch standard band saw machine, a large universal saw bench with tilting table, a medium sized universal saw table with boring attachment, a large gang lath and picket mill, a small

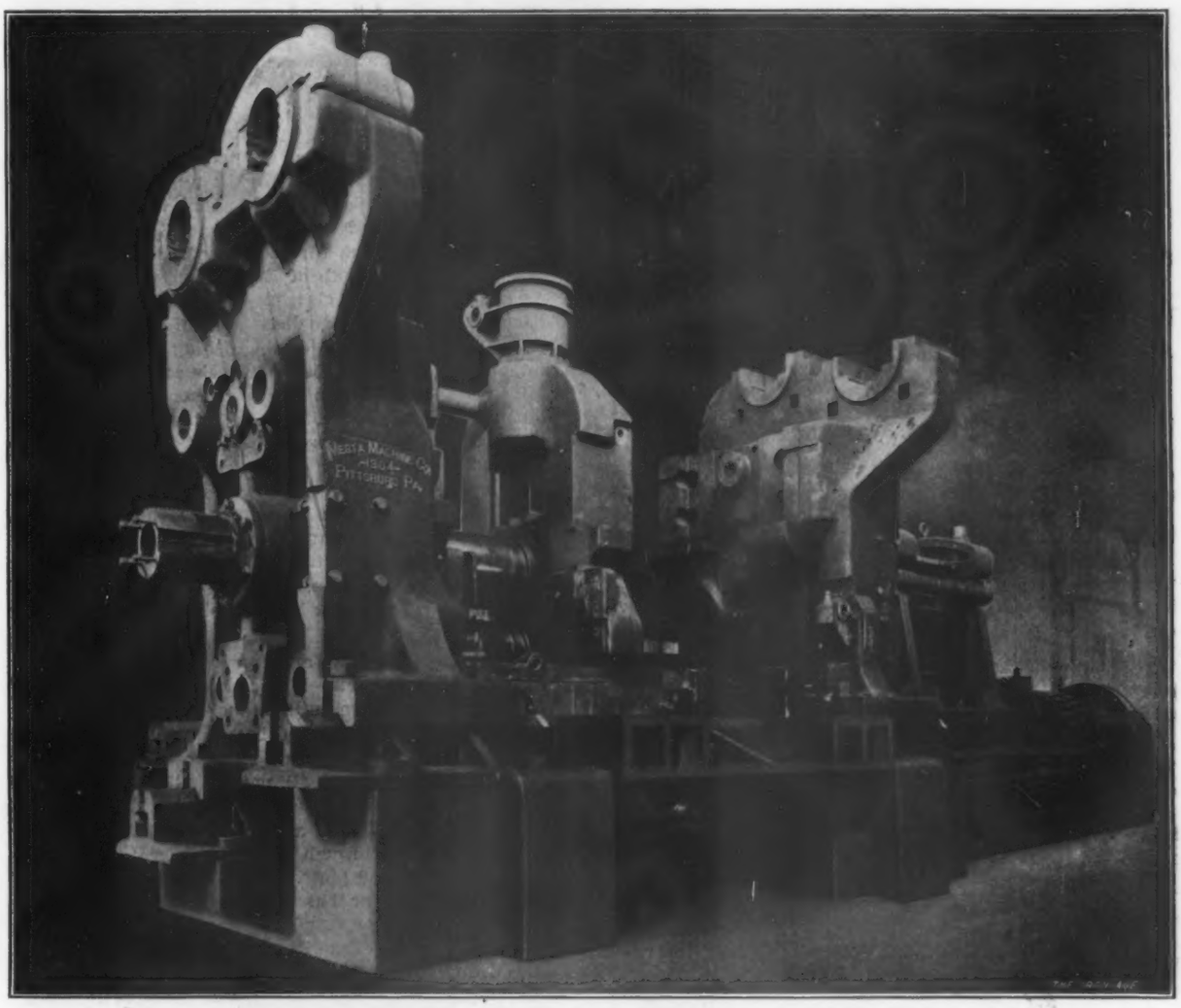

Fig. 6.—The 40-Inch Slabbing Mill as it Appeared in the Erecting Shop of the Mesta Machine Company.

the paper is fastened on them, so that it is kept tight automatically.

The new class of molding machines includes a 10-inch molder, which is, perhaps, the heaviest outside molder ever produced, weighing some 6000 pounds. It is so designed that the inside vertical spindle which is on the table is accessible and the table is supported close to the under cutter head. The table may be lowered 12 inches to work the deeper class of stock, and clamps promptly to the frame in three places, making the machine practically as rigid as an inside molder. All of the cutter spindles are of large diameter, and the bearings are of the patent clamp style. Two 7-inch molders exhibited are of somewhat the same general plan, one having the inside vertical spindle attached to the table, while the other has it attached to the frame. A 6-inch molder built on the latter plan is also exhibited. A number of other styles of surface planing machines are shown, one being a 24-inch double surfacer fitted with divided feed rolls and divided chip breaker. It is of medium weight and will plane up to a thickness of 8 inches.

Another interesting machine is a cabinet reciprocating self contained cabinet electrotype saw bench, a medium sized swing saw, and a 26-inch right hand gang ripping and edging machine.

The following is the list of prices of the German steel syndicate for export and for the home market:

	Export price. F.o.b.	Home price. F.o.r.
	s. d.	s. d.
Billets	74 0	95 0
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Rails, 50 pounds up	88 0 to 90 0	120 0
Basic bars	107 0 to 112 0	112 0 to 115 0
Joists	85 0	105 0
Plates, ship	107 6 to 112 0	110 0 to 115 0
Angles	107 0 to 112 0	112 0 to 115 0

The export prices are said to be nominal to some extent, it being believed that concessions may be obtained.

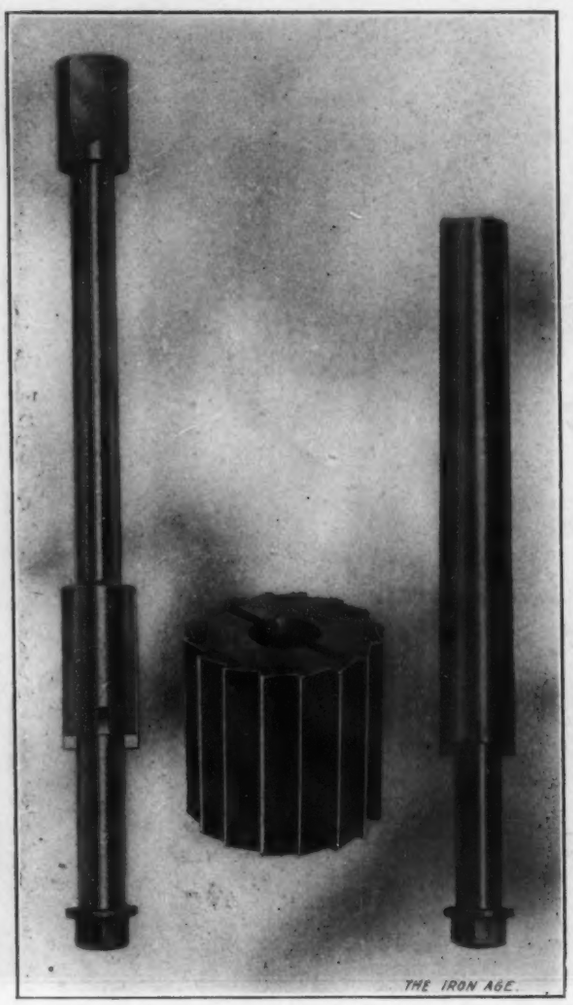
Coal briquettes form 10 per cent. of the fuel used on the Paris, Lyons & Mediterranean Railway, these being made of slack and dust from the company's mines. It is found that steam can be raised more quickly with the briquettes than without them.

F.

The Gisholt Solid Adjustable Reamer.

The solid adjustable reamer shown in the engraving herewith is one of the smaller tools manufactured by the Gisholt Machine Company, Madison, Wis. Like many other tools which have been placed on the market, its invention was the result of a need for such a tool which existed in the manufacturer's own shop. It was felt that an ideal reamer should possess all the solidity of a one-piece tool, and yet be capable of expanding to compensate for wear and regrinding.

A particularly valuable feature in this solid adjustable reamer lies in the size and thickness of the blades. The blades are made of the best tool steel, and each has two cutting edges, as may be seen in the illustration. The



The New Reamer and Two Forms of Standard Arbors.

expanding is effected by placing liners under the inserted blades. The extra weight and width of stock used in the blades materially reduce the liability of breakage. The body of the reamer is of high carbon steel bored and slotted to fit standard reamer arbors of the form shown in the illustration. Especial care is taken in building these reamers to insure accurate fitting of the blades to the body. The reamers are now manufactured in all standard sizes, for both hand and machine use.

The production of pig iron in Germany, including Luxemburg, during July last comprised 143,577 tons of foundry pig, 34,916 tons of Bessemer pig, 542,284 tons of Thomas pig, 58,956 tons of spiegeleisen, and 67,594 tons of forge pig—a total of 847,327 tons, which contrasts with 836,785 tons in June last, and 865,343 tons in July, 1903. The aggregate output for the first seven months of the year is returned at 5,846,740 tons, as contrasted with 5,799,875 tons in the corresponding seven months of 1903.

The Hamilton-Holzwarth Steam Turbine.

Ever since the announcement that the Hooven, Owens, Rentschler Company, Hamilton, Ohio, was engaged in the design of a steam turbine the engineering public has been awaiting its appearance with interest. One of the first to be constructed is now on exhibition in Machinery Hall at the St. Louis Exposition, and the exterior view, Fig. 1, shows just about as much as the observer may learn of it by inspecting it at the fair. Those who are interested to know not merely what it will do, but how it is done, will be gratified now that the company has given out the details of its construction.

The turbine proves to be another multi-stage axial flow turbine, and, consequently, belongs in the class with the Parsons, Curtis and Rateau machines, as distinguished from the single stage turbines of De Laval and Riedler-Stumpff makes. It employs a plurality of stationary disks and running wheels, both having vanes about their circumference. The Parsons turbine allows the steam to expand in both the stationary and running blades, while in this turbine the expansion occurs only in the stationary blades. The increased volume of the steam as it pursues its course through the turbine is accommodated by increasing the radial depth of the stationary blades. The leakage caused by the clearance between the shaft and the bore of the stationary disks is small, due to the special construction. Other distinguishing features of the turbine are that the number of wheels and their vanes is considerably smaller than in the Parsons type, and that balancing pistons are omitted. It was found that the axial thrust of the running wheel shaft was small enough to be easily taken up by thrust ball bearings, since the steam pressure is practically the same on both sides of the running wheels. An advantage of this is that the leakage loss, due to balancing pistons, is avoided. The turbine is of the horizontal type and is designed and so balanced that the machine is kept below its critical speed —that is, the velocity at which the shaft would be apt to vibrate.

For units of 750 kw. and upward the rotating body is divided into two parts—high and low pressure turbines —but smaller units are built in one turbine casing. The turbine casings, pedestals and bearings for the generator are placed upon one rigid bed plate of box pattern, insuring the alignment of all parts. All steam, oil and water piping, including the steam inlet, regulating and by-pass valves, are within and below the bed plate. The steam first passes through a steam separator, which is located below the bed plate, thence through the main inlet valve. The latter has an extended stem, which is connected with a floor stand and hand wheel placed near the high pressure end of the turbine. The steam then passes through a regulating valve and from there through a curved pipe to the head of the high pressure turbine.

The Steam Distribution.

From the ring channel of this head the steam flows through the first set of stationary vanes, these being rigidly connected to the head, and its direction is changed to a partly tangental one, while velocity is imparted by a partial expanding. From here the steam flows in a full cylindrical belt interrupted only by the vanes of the first wheel, thence through the following stationary disks, and so on. From the last wheel the steam is led through receiver pipes to the front head of the low pressure casing, or if there is only one casing immediately to the condenser. The condenser may be of either the jet or surface type, and is placed as near as possible to the exhaust opening in the low pressure casing.

The steam distribution in the low pressure turbine is the same as in the high pressure. The low pressure front head, however, has an additional nozzle, through which an auxiliary supply of live steam is allowed to enter if required by an overload. This steam is controlled by the governor, and the design is such that no back pressure is exerted against the steam from the high pressure turbine. Its action is somewhat that of an injector sucking the low pressure steam through the first

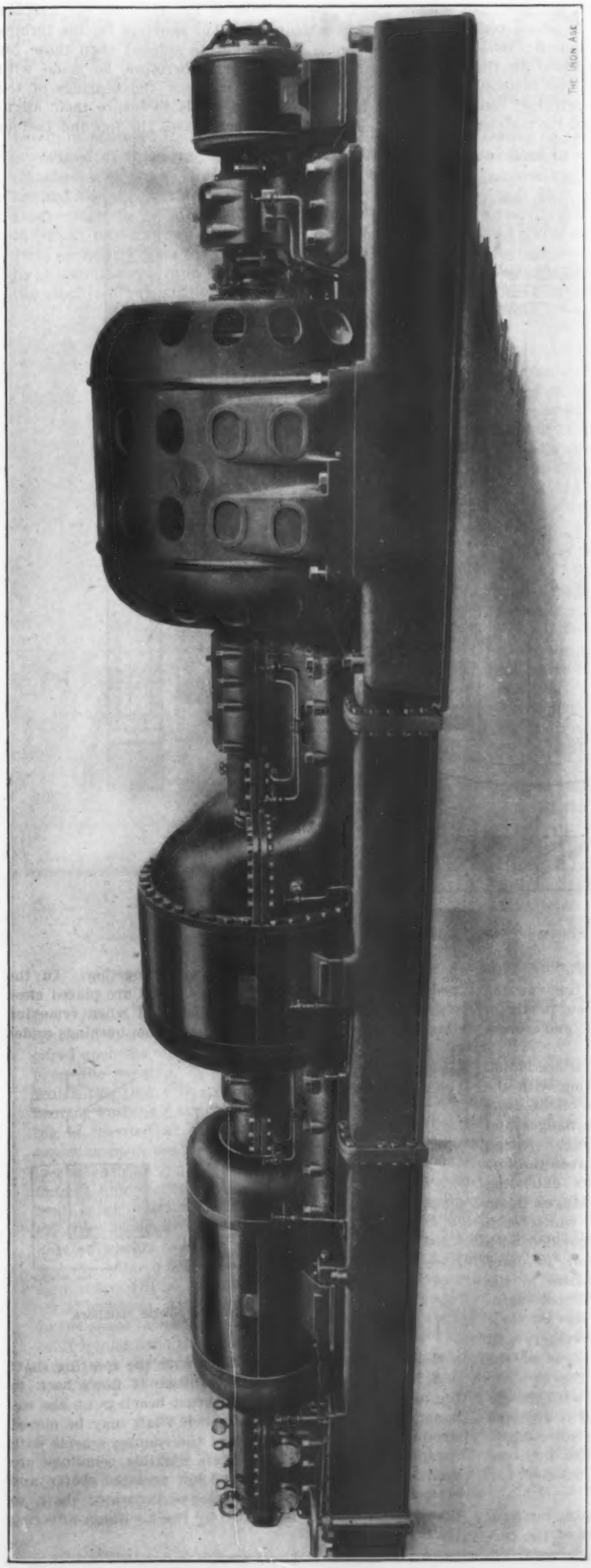


Fig. 1.—A 1500 Horse-Power Hamilton-Holzwarth Steam Turbine Driving a 1000-kw. Bullock Generator; Now on Exhibition at the World's Fair.

stationary vanes of the low pressure turbine. The curvature of the vanes is such that the steam will increase its velocity while passing through the stationary vanes in a ratio corresponding to its operation.

The Stationary Disks.

The purpose of the stationary disks, as has been said, is to prepare the steam for its action in the power transmitting part of the turbine, the running wheels. The disks are held in grooves in the casings, which are split horizontally. The vanes are of drop forged steel, milled and located in a groove on the outside periphery of the disks. By milling these vanes accurate spacing and absolute control of the angle are obtained. After being riveted to the disks the vanes are ground, giving them the profile they should have for efficient steam expansion. A steel ring is finally shrunk on the outside periphery of the vanes and steam channels.

Fig. 2 gives a side view of a stationary disk showing three sets of nozzles, with a part broken away to show the adjustment of the nozzle section, a sectional view of a disk, and a segmental section on the line *y y*. The nozzle ring or partition is composed of two disks screwed together by bolts near the center and periphery and having holes through the center for the passage of the turbine shaft. The disks have segmental openings, as shown at *a*, *b* and *c*, and the inner face of one disk is recessed at *d* along the sides and ends of the openings *a*, *b* and *c*, so that when the disks are screwed together a groove is formed in the side and end walls of the openings. Ring *e* encircles the edges of the disk. The nozzle passages are located in the apertures *a*, *b* and *c*. The shape and size of these passages are determined by nozzle members *f*, *g* and *h*. The members *f* and *g* are adjusted to the respective ends of the openings and have projecting flanges, *i*, which fit into the channels at the ends and bottom of the openings formed between the disks. The intermediate members *h* have angularly positioned flanges to fit the recesses at the base of the openings. The flanges are secured in position by rivets which pass through the disks and flanges, securing each of the nozzle members in position. These end and intermediate members, *f*, *g* and *h*, determine the form and direction of the nozzle passages through the dividing walls. Details of the top and side views of the three forms of nozzle members are shown in Fig. 3.

The Turbine Wheels.

The turbine wheels next to the stationary disks are the most important part of the turbine. Though the steam flows through both in the same way their features are quite different. Weight is not an important factor in the stationary disks, but the turbine wheels must be as light as possible for the sake of efficiency. The heavier they are

the larger the shaft must be, and necessarily the bore of the stationary disks, which aggravates the leakage loss. They must also be strong enough to stand centrifugal stresses; must be perfectly balanced; must have the edges of their vanes accurately formed for the most efficient influx and efflux of the steam, and fastened with the greatest security. These are the principal conditions for the construction of the wheels, and the manner in which they have been met is shown in Fig. 4. This shows a radial sectional view of one of the running wheels and part of the shaft, also a side view partly in section of the outer part of one of the wheels, and a cross section through one of the vanes.

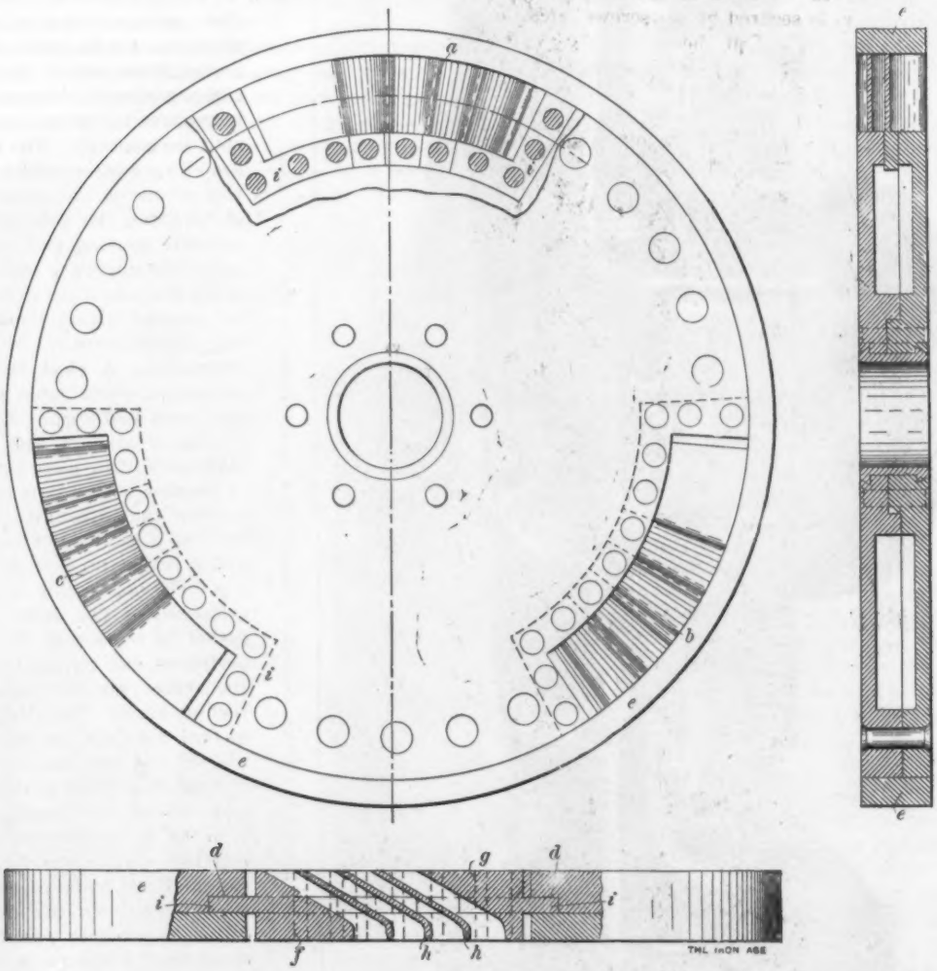


Fig. 2.—A Stationary Disk; Side View and in Section.

Each wheel is built up of two disks, which are bolted to a hub or sleeve mounted upon and rotating with the shaft to which it is splined. The outer edges of the disks are rolled over to form laterally projecting flanges and are bolted together near the flanges through spacing blocks. To strengthen the disks midway between the hub and flange there is another ring of bolts extending through spacing tubes. The blocks near the flanges, taken together, form a vane-supporting ring, of which each block is a segment. Each of the blocks is provided with angular channels, *a*, extending inwardly from the outer surface of the block and converging, as shown in the side view. The bottom of each channel is enlarged slightly, as shown. The vanes are formed with lips on their front and rear walls, which are bent convergingly and forced in to channels, *a*, while the outer edges of the vane rest upon the flanges of the disks. The lips are thickened at their extremities to correspond with the enlarged bottom parts of the channels. A band is adjusted to encircle the series of vanes, engaging their outer edges, which are recessed to receive the band. With this construction each of the vanes is held rigidly in position.

The Bearings.

With the exception of the governor, regulating mechanism and pump the bearings are the only part of the turbine in which metal comes in contact with metal, and an ample supply of lubricant is the recourse for keeping the friction at a minimum. The bearings for the turbine shaft have much less weight to support than those for the generator shaft, and can, therefore, be made with straight cylindrical shells, whereas the bearings of the generator have ball shaped shells to insure their alignment with the shaft. In both cases the top and bottom halves of the bushings are screwed together. In the pedestal and caps the oil inlet and outlet are placed close together, so that no piping is disturbed when removing the bushings. The oil is fed to the bottom bushings under a slight pressure, and then flows with the rotating shaft and is taken off in the cap, whence it flows back to the oil outlet. With the ball thrust bearings on the exhaust side of the turbine the whole shaft may be moved axially to adjust the position of the running wheels with regard to the stationary disks. Flexible couplings are used between high pressure and low pressure shafts and between the low pressure shaft and generator shaft, so that each shaft may be located by itself without affecting the others.

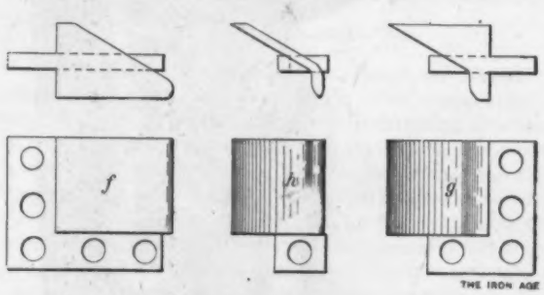


Fig. 3.—The Three Forms of Nozzle Members.

The difficulty of avoiding leakage of steam through the shaft bearings is one which has harassed all turbine builders. The manner in which it has been met by the designers of this machine is worthy of attention. Fig. 5 shows the form of construction of the bearing, which has the double object of preventing the leakage of steam along the shaft and the leakage of oil from the bearing into the turbine. The illustration is a vertical sectional view of the bearing, showing part of the turbine at the inlet end. It will be observed that the diameter of the turbine shaft is reduced as it leaves the head of the turbine. About the shaft a sleeve, *a*, is secured by set screws, and abuts against the shoulder formed at the reduced part of the shaft. The sleeves projects from the point of union with the shaft into a recess formed in a collar, *b*, which projects outwardly from the turbine head. This collar is set in an annular groove in the turbine head against a packing ring, *c*, to prevent leakage at that point. Where the

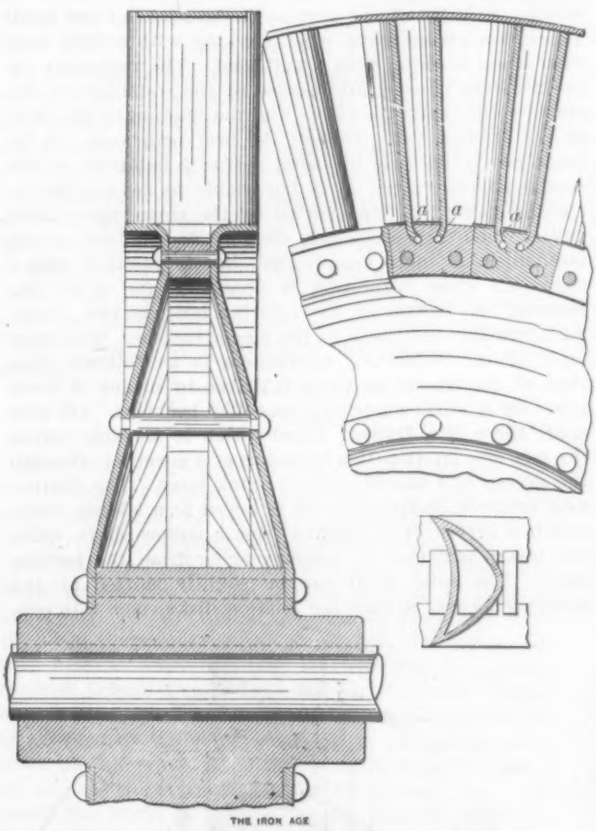


Fig. 4.—Details of a Running Wheel and Vanes.

shaft passes through the collar *b* there is an enlarged space at *d*, which is also filled with packing. A nut secured upon the outer surface of the sleeve is used to compress the packing. The collar *b* also has a flange upon which the ring *c* is secured, this ring extending to the bearing bushing *f* and fitting in a channel therein. Packing is inserted at *g* between the collar *b* and the nut screwing upon the ring *c*, and a gasket, *h*, in the channel in the bushing *f*, against which the ring *c* bears. Drip flanges, *i*, project inwardly from the bushing *f* and a duct leads to an outlet, *j*, in the pillow block for the escape of oil from the bearing. Steam following the shaft must pass outwardly over the sleeve *a* and then underneath it and the collar *b* before it reaches the packing *d*. By this time there will be sufficient condensation to prevent material leakage. Any leakage which does occur is pocketed in the space inclosed by the ring *c* and serves to expel the oil dripping from the bearings through the duct and opening *j*, thus preventing the oil from accumulating and following the shaft into the turbine when the latter is at rest.

Provision for Expansion.

The high pressure and low pressure shafts and casings can expand easily, as both are held rigidly only at the cool or exhaust end by the pedestals. The casings are not fastened to the bed plate and with the shafts and running wheels can slide to expand against the direction in which the steam flows. At the intake end, which is the hottest, there is no rigid connection, not even between the pedestal bearing and the casing.

The Flexible Coupling.

It was the above arrangement for expansion which led to the design of the coupling used between the high and low pressure shafts and the low pressure and generator shafts. The faces of the coupling disks are each set with a ring of projecting lugs, each lug being made up of laminations of sheet metal. The lugs are disposed in pairs alternating with single lugs, the arrangement being such that when the coupling is engaged the pairs of lugs straddle the individual lugs, but the lugs of each disk do not quite reach the face of the other disk. The advantage of the coupling is that it gives some flexibility, allowing silent running at high speed, even though there is vibration or deviation in the alignment in the coupled shafts.

The Stuffing Boxes.

At the four places where the shaft enters the steam chambers of the casing a stuffing box of the form illustrated in connection with the bearings, Fig. 5, is used. These stuffing boxes contain no half rings. A shaft revolving in a sufficiently long box with a small clearance throttles the steam which tries to escape along the shaft. This is the principle on which the stuffing boxes are designed, but to avoid a long box, which makes a longer shaft necessary, a telescopic construction is substituted.

The Governor.

The governor is directly driven by the turbine shaft and is of the spring and weight type specially adapted to high speeds. Fig. 6 shows a diametrical section of the governor and an end view partly in section; *a* is the governor spindle and *b* is a sleeve reciprocating upon it under the influence of the governor, being connected with the valve regulating mechanism; *c* is a cylindrical casing fast upon the governor spindle, and contains the governor mechanism; *d* is a cross spindle intersecting the axis of the governor spindle, through which it passes with a loose fit so that it is free to shift endwise. The governor weights *e* slide freely on the cross spindle and have a pair of collars, *f*. The caps *g* are secured upon the outer ends of the cross spindle and fit in openings in the casing. They are used to adjust the compression of the helical springs surrounding the cross spindle and opposing the centrifugal force, which tends to throw the weights outwardly. A pair of arms, *h*, are pivoted to the casing and have rollers on their inner ends, which engage the groove formed between the flanges for the governor weights. There are two of these arms on each of the weights, both being pivoted on a common shaft, *i*, which is mounted on lugs projecting from one end wall of the casing. The arms *j* connect with arms *h* forming bell cranks, which transmit the motion of the radial movement of the governor weights to the sleeve connected with the valve control, giving it an axial movement on the governor spindle; *k* is a collar fast on the governor spindle between the cross spindle and the inner end of the sleeve *d*. Prongs projecting from this collar toward the sleeve have grooves in their side faces parallel with the spindle. Similar prongs project from the inner end of the sleeve, intermeshing with the prongs of the collar. Balls set in longitudinal grooves between the prongs reduce the friction caused by the sleeve reciprocating upon the spindle. The governor weights have guideways parallel with the cross spindle, in which rollers *l* supported by the end wall of the casing engage. The action of the governor resembles that of an ordinary centrifugal governor—that is to say, as the weights move outwardly and inwardly the bell crank levers transmit motion endwise to the sleeve, which effects the adjusting of the valve controlling apparatus. The use of double bell crank arms on each side gives a symmetrical disposition of the mass in motion, and a symmetrical transmission of the strains of adjustment. The balls between the prongs of the spindle collar and sleeve add to the sensitiveness of the governor. The driving power for the governor parts is transmitted through the casing, one end of which is

keyed to the governor spindle, and both heads are rigidly bolted and doweled to the rim connecting them. The object in having the cross spindle free to slide through the governor spindle is to allow the center of gravity to

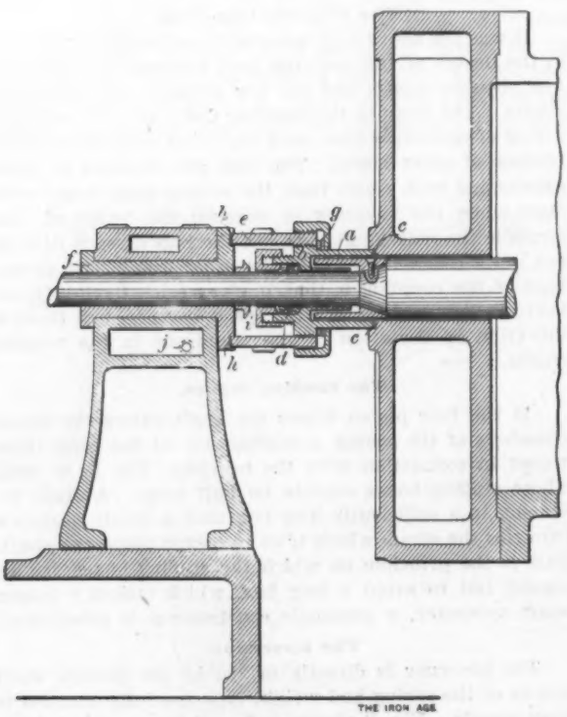


Fig. 5.—Detail of a Bearing and Stuffing Box.

be adjusted until it coincides with the geometrical center of the apparatus.

The Regulating Valve.

The regulating valve is located below the bed plate and, as has been said, is connected by a curved pipe with the high pressure front head on one side and with the inlet valve on the other. Though a throttle valve, it resembles one of double seated poppet type, but of a special design, in which the valves are balanced. The valve and valve seats are of tough cast steel to avoid corrosion as much as possible. The valve body is of cast iron, but, as the expansion of cast iron and cast steel are about the same, troubles from leaking are not experienced. The steam is admitted from the inlet into a chamber at the center of the valve. There are openings at the top and bottom of this chamber which contain the valve seats, both being on the upper side of the openings. The valves are on one stem a fixed distance apart, but are made in two pieces to allow their removal. The steam passes from the upper valve opening through a passage to the same outlet which communicates with the lower valve opening. Immediately below the regulating valve and forming a part of it in one steam chamber is located the by-pass regulating valve, which controls the steam supply to the by-pass nozzles in the low pressure head. This is also a double seated valve, and, being connected with the same stem as the regulating valve, avoids a second stuffing box.

The Regulating Mechanism.

The main regulating valve is not actuated directly by the governor, but by means of a regulating mechanism, for the reason that direct acting governors do not have an equal resistance for all positions and do not make the angular velocity of the turbine independent of the load. There is a higher speed when working with a light load than when working with a full load. The resistance on the governor is especially caused by the resistance of the steam acting upon the valve and the friction of the stem in the stuffing box. Though the first resistance can be made nearly uniform by using perfectly balanced double seated poppet valves, it is impossible to reduce the irregular sucking action exerted by the steam upon these valves when they are nearly closed. The indirect acting mechanism is more complicated, but is justified where extremely close regulation is necessary and when the moment of inertia of the rotating body is very large. Such are the conditions in the steam turbine. The principle of the regulating mechanism is as follows: The stem of the regulating valve is driven by means of bevel gears by a shaft supported in roller bearings. On this shaft there is a friction wheel which is movable across the face of a friction disk by means of a governor through the agency of a sleeve and bell crank lever. The friction disk revolves continually and is keyed to a sliding shaft, which is driven by a coupling from a hollow shaft, while the latter is driven by worm gearing from the turbine shaft. The solid shaft can be slightly shifted by the governor sleeve, so that the friction disks come into contact only when the angular velocity changes. If this change is relatively great the sleeve will draw the periodically revolving friction disk far from the center of the continually revolving one and will quickly drive the stem of the regulating valve and regulate the steam flow. Thus the governor can change the intensity of its actuating. When the angular velocity falls below a certain percent-

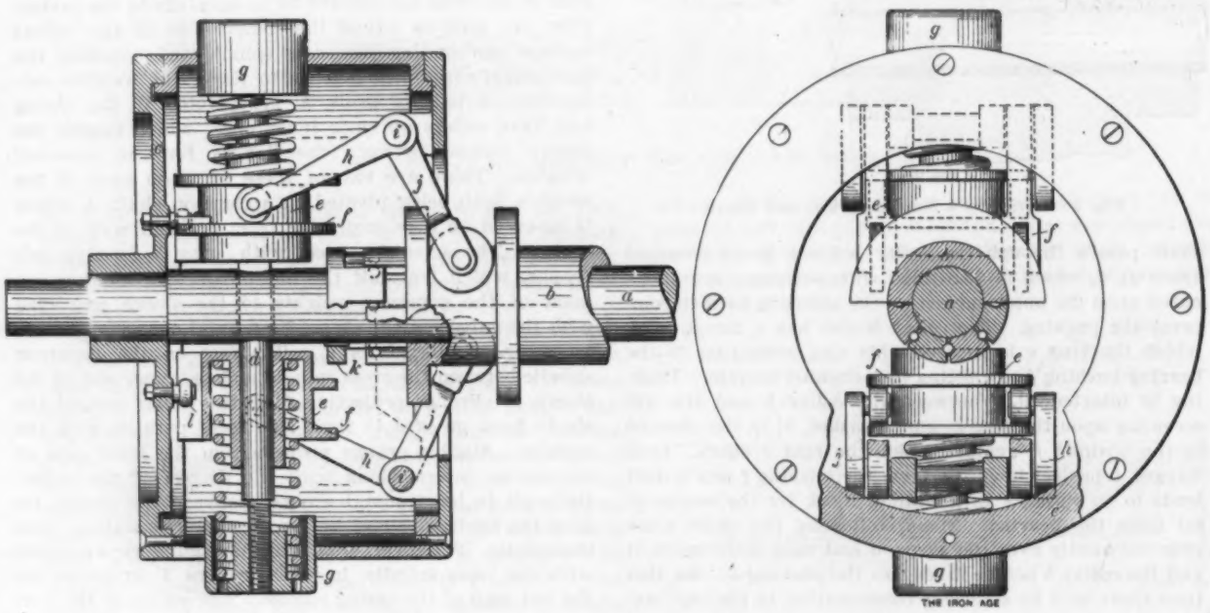


Fig. 6.—Section and End View of the Governor.

age of the normal speed the driving friction disk is drawn back by the governor. The regulating valve remains open and the whole regulating mechanism stops, though the shaft is still running. This avoids considerable wear on the regulating mechanism during starting and stopping. The governor shuts down the whole turbine when the angular velocity exceeds 2½ per cent. of the normal. Therefore, if an acident should happen to the governor, the only thing which would result would be the stopping of the turbine; hence there is no need of an auxiliary governor for safety. The spring balance attached to the bell crank lever of the regulating mechanism makes it possible to alter the speed of the turbine while running, which might be necessary in order to run the turbine parallel with another prime mover. The hand wheel of this spring balance is outside of the pedestal for the regulating mechanism and near the tachometer and floor stand and hand wheel. The spring balance allows a change of 5 per cent. either way from the normal speed of the turbine.

Lubrication.

All bearings of the entire turbo-generator are fed from an oil tank of large capacity, which is located in the base. An oil pump driven by worm gearing from the turbine shaft provides positive circulation. The oil after being forced through the bearings is returned to the tank, filtered through a strainer, and has sufficient time to radiate part of its heat before it is used again. Each pressure pipe to a bearing contains a valve by which the flow of oil may be regulated. All revolving parts of the turbine are incased, and the principal part of the regulating mechanism operates in a bath of oil, and there is no place on the whole turbine which is not lubricated automatically.

Oliver Williams.

Oliver Williams, president and treasurer of the Bryden Horseshoe Company, Catasauqua, Pa., died at his home in that place on Saturday, September 17, after a brief illness with heart troubles, aged 73 years.

Mr. Williams was born in Wales in 1831 and was brought to America by his parents in 1833, locating at Schenectady, N. Y., where the family remained until 1840, when they removed to Catasauqua, Pa., where the father held an important position with the then newly organized Lehigh Crane Iron Works. Here the father died in 1845. Mr. Williams received such education as was afforded by the country schools of the times, and a year in the Allentown Academy at Allentown, Pa., and a year in the Moravian School at Bethlehem, Pa. He learned the trade of molder in the foundry connected with the Crane furnaces at Catasauqua and worked at the trade until 1849, when he went to Philadelphia, entering the optical establishment of McAlister & Co., where he remained until 1853, when he joined James Queen, forming the firm of Queen & Co.

In 1855 Mr. Williams took Horace Greeley's advice to go West and grow up with the country, settling in Milwaukee, where for a period of three months he and Chester A. Arthur, then a young lawyer, who had also gone West to grow up with the country, roomed together. Mr. Arthur's metropolitan tastes did not take kindly to the West, and he returned to New York City, where Mr. Williams visited him at the old Bancroft House. While there he met Peter R. L. Hardenburg, with whom he formed a partnership in the leather business, locating in Chicago in 1858. Mr. Williams remained in Chicago until 1867, when he removed to Catasauqua to become the general manager of the Catasauqua Mfg. Company, then a newly organized concern. Mr. Williams was with the Catasauqua Mfg. Company as general manager from 1867 to 1879, and from 1879 to 1892 as its president. He saw it begin in a small way and grow to be one of the best known and largest merchant mills in Eastern Pennsylvania.

In 1882 the Bryden Horseshoe Company was organized, Mr. Williams taking an active part in having the works established in Catasauqua. In 1892 he resigned from the Catasauqua Mfg. Company, and as treasurer and general manager until 1899 and as president and treasurer from then until his death he devoted himself to its successful establishment as one of the largest horseshoe manufacturing concerns in the country. At the time of his death Mr. Williams was the president of the Cement National Bank, at Siegfried, Pa.; vice-president of the Whitehall Portland Cement Company, Cementon, Pa., and a director of the E. P. Wilbur Trust Company, South Bethlehem, Pa.

For three years Mr. Williams was the president of the National Iron Association and for 15 years president of the Eastern Iron Association. He had a wide acquaintance among iron manufacturers throughout the country, and his genial disposition and ready wit made him hosts of friends. He was a Republican in politics, being his party's candidate for Congress in 1896 in a district normally good for 10,000 Democratic majority, but was defeated by about 1700. Mr. Williams was always an active

OLIVER WILLIAMS.

church and Sunday school worker, being connected with the Trinity Lutheran Church. He is survived by a widow and three daughters.

To Test an Obnoxious Illinois Statute.

Some time ago the labor unions in Illinois exerted sufficient political power to force through the State Legislature a statute making it a misdemeanor, punishable by fine or imprisonment, or both, for an individual or a firm to omit from an advertisement for help the fact that a strike or lockout existed in his or its plant when such did exist.

Jacob J. Walser, president of the Goss Printing Press Company, Chicago, was arrested last week, at the instance of labor unions, for failing to state in an advertisement for men that a strike existed in his plant, his company being one of many in Chicago against which the International Association of Machinists is still technically waging a strike, though strike conditions long since ceased to exist. The Illinois Manufacturers' Association has championed the cause of Mr. Walser and the Goss Company, and has decided to embrace this opportunity of testing the constitutionality of the law. Section 1 of the law reads as follows:

> It shall be unlawful to induce, persuade or engage workmen to change from one place to another in this State, or to bring workmen of any class or calling into this State to work in any of the departments of labor, through or by false representations, false advertising or false pretenses concerning kind or character of work to be done or amount and character of compensation, or sanitary or other conditions, or as to the existence or nonexistence of a strike or other labor trouble pending between employers and employees at the time of or previous to such engagement.
>
> Failure to state in any advertisement, proposal or contract for the employment of workmen that there is a strike, lockout or other labor trouble at the place of proposed employment when such strike, &c., exists, shall be deemed a false advertisement and misrepresentation for the purpose of this act.

Section 2 provides for a fine not exceeding $2000 or imprisonment in the county jail not exceeding one year, or both penalties, for violation of the above statute. Section 3 makes it a felony, punishable by imprisonment in the State penitentiary not less than one year or more

than five years, for bringing armed workmen into the State. Section 4 gives the workman the right of action for recovery of all damages and attorney's fees resulting from loss to him owing to false advertisement.

The New Warren Steam Pumps.

A simple vertical and a compound horizontal steam pump are shown in the accompany illustrations. The unusual and commendable features of these are the provision for pocketing impurities in the water handled, and the accessibility of the packing between the high and low pressure steam cylinders in the compound pump and of the packing of the plungers in the water end of both pumps, which are of center packed plunger type. Eight pumps of the vertical type are installed in the steam, Gas and Fuel Building at the St. Louis Exposition, where they feed a battery of water tube boilers. The horizontal pump is a new addition to the line built by the Warren Steam Pump Company, Warren, Mass. The horizontal pump has a compound steam end; otherwise both are of the same general pattern.

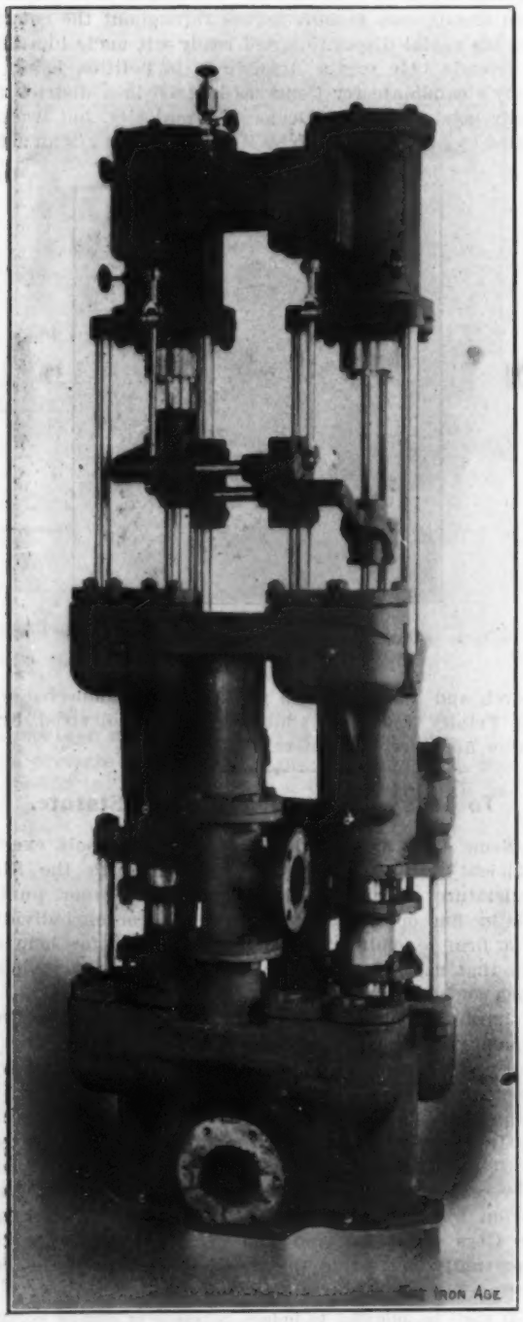


Fig. 1.—A Simple Vertical 14 x 9 x 12 Inch Pump.

Being of outside center packed plunger type the pumps are well adapted to high pressure service, and they are particularly fitted for handling water containing sand or grit in suspension, as the vertical distance from the suction valve deck to the plunger is sufficient to pocket any foreign substance that may be carried into the pump. As will be seen in both sectional engravings, Figs. 2 and 4, there is ample space available for collecting sediment. The center packed style of construction enables any wear of the plunger or glands to be easily detected and adjusted, since the working parts are in sight. The water end of the pump is made up of intersecting circular sections which give a distinctive appearance, but, what is more important, offer a peculiarly strong mechanical construction. The valve gear is of the outside poppet style and is easily adjusted. Hand holes provide ready access to the interior of the pump for clearing out sediment, or for other purposes.

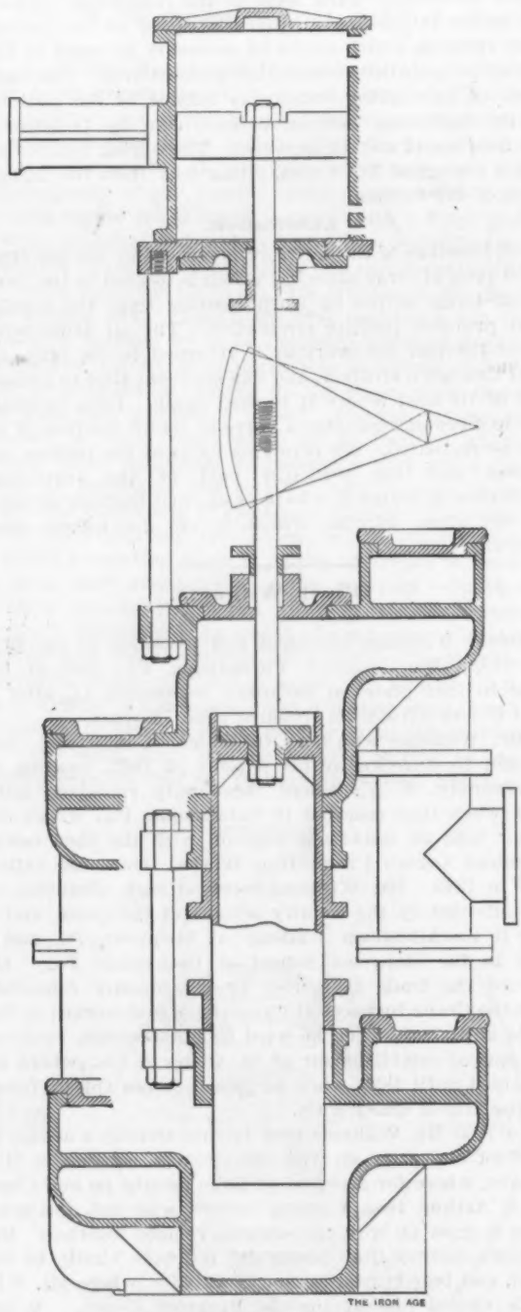


Fig. 2.—Sectional View of Pump Shown in Fig. 1.

Often in compound pumps the connection between the high and low pressure cylinders is entirely inclosed, which may prevent the detection of steam leakage, but in the Warren compound pump the connection is entirely ex-

posed, so that any leakages of steam may be seen at once and corrected, there being a separate stuffing box and gland for each cylinder, which are adjustable by means of nuts. The high pressure cylinder is placed inside next to the tie rods. Either steam piston may be removed without disturbing any parts except one of the cylinder heads. The steam cylinders of the horizontal pump are 18½ and 28 inches in diameter, the water plunger is

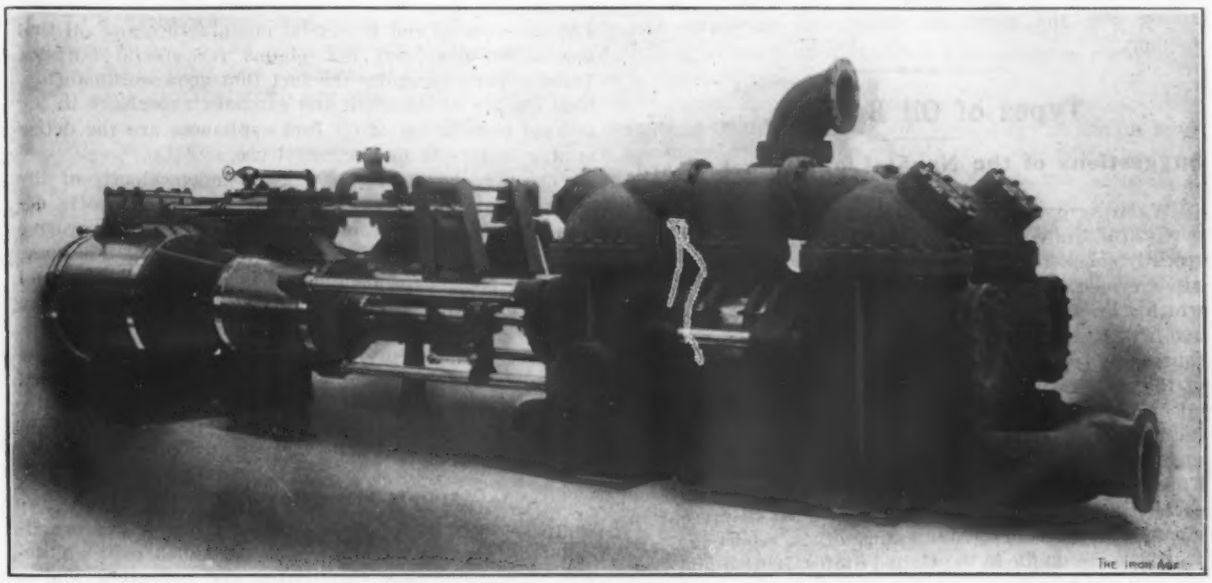


Fig. 3.—A Compound Horizontal 18½ and 28 x 14 x 24 Inch Pump.

14 inches in diameter, and the stroke is 24 inches long. It is designed to pump 1600 gallons of water a minute against a head of 150 pounds, is 23 feet long and weighs about 20 tons.

The vertical pump has its space for pocketing in the base in much the same manner as the other machine. A point in favor of the vertical type is the small floor space required. This machine is 25 x 42 inches at the base and is 9 feet high. For marine work a bracket is used to support the pump. The pump illustrated has a steam cylinder 14 inches in diameter, a pump plunger 9 inches in diameter and a stroke of 12 inches.

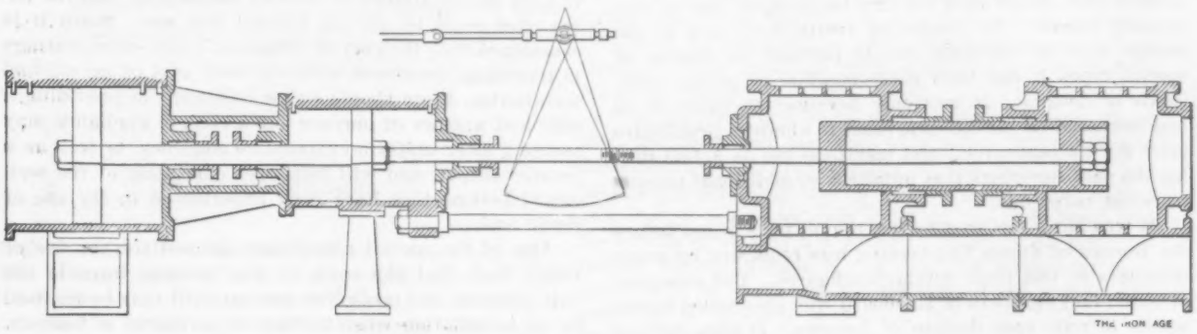


Fig. 4.—Sectional View of Pump Shown in Fig. 3.

A company known as the American Agricultural Packing Company has recently been incorporated under the laws of New York with $2,500,000 capital stock, fully paid in. Thomas W. Taliaferro of Chicago is vice-president and general manager of the new company, but the other officers are either not selected or their names are withheld for the present. Mr. Taliaferro is authority for the information that this enterprise is backed by large financial interests and that it is the purpose of the company to erect and equip extensive and thoroughly modern plants for packing purposes. The first plant to be erected will have a daily capacity of 1000 cattle, 2000 hogs and 500 sheep. Land has already been secured, but its location is withheld. It is probably in or near Chicago. Plans are already drawn for this plant, but details are withheld. Mr. Taliaferro's address is 218 La Salle street, Chicago.

Tests of a Reeves Simple Engine.—Excellent steam economy and mechanical efficiency over a wide range of loads were shown by a Reeves simple 15.x 14 inch engine that was tested at Sibley College, Cornell University, last August, under the direction of Profs. R. C. Carpenter and Herman Diedrichs. Runs were made, both condensing and noncondensing, from no load to 25 per cent. overload, but the condensing apparatus was not as good as it might have been, and the highest vacuum was only 23.5 inches. At the normal rated load, 130 indicated horse-power, the engine consumed 28 pounds of steam when exhausting into the atmosphere and 26 pounds when exhausting into the condenser. From 40 per cent. underload to 40 per cent. overload the steam consumption was nearly constant with the condenser in operation, the extremes and mean being 27.2 pounds at 80 indicated horse-power, 26 pounds at 130, and 27.5 pounds at 176.3 horse-power. Without the condenser the steam economy was best between 78 and 156 indicated horse-power, at each of which extremes the water rate was 30 pounds, while 28 pounds was the minimum between. Noncondensing, the highest mechanical efficiency was 92.5 per cent. at 147.1 brake horse-power, and condensing, 95.8 per cent. at 154.1 brake horse-power. From 133 to 168.2 brake horse-power the mechanical efficiency was practically constant at 95 per cent., but dropped to 90 per cent. at 78 brake horse-power.

J. B. Nau, 1 Broadway, New York, advises us that he is, and has been since 1895, the representative in the

United States of the Meyer recarburizing process, which is covered by the United States patent No. 524,904 of August 21, 1894. This process, which has been largely used in European steel works, especially in the manufacture of basic steel, consists in the introduction into the liquid refined metal of dried briquettes of pulverized coal or coke, mixed with a sufficient amount of lime, as a binder for the carbonaceous material. One advantage of the presence of lime is its purifying action on the carburizing substance, thereby counteracting the danger of introducing into the metal an undesirable substance like sulphur.

Types of Oil Burners.

Suggestions of the Naval Liquid Fuel Board.

WASHINGTON, D. C., September 27, 1904.—The final report of the United States Naval Liquid Fuel Board, which recently completed an extended series of tests of the relative evaporative efficiency of coal and petroleum, of which a brief abstract was given to the press several weeks ago, will be made public by the Navy Department in the course of a few days. One of the most interesting features of the report will be a discussion of the various types of oil burners, together with practical suggestions to manufacturers and steam users with regard to the principles upon which they should be constructed and installed. Through the courtesy of the Secretary of the Navy, the correspondent of *The Iron Age* is enabled to present in advance an abstract of this feature of the report.

There are on file in the United States, British and Continental patent offices several thousand designs of oil-fuel burners. These records show that men of almost every vocation and profession consider themselves competent to design such oil fuel appliances. The condition of affairs in this respect has been expressed by one writer as follows: "The oil fuel burner has furnished almost as much work for the Patent Office as the car coupler, and at the present time very few, if any, of these patents are designed in accordance with the fundamental principles that should govern the construction of such devices."

Few Primary Classes.

While the belief is general that these various patents differ in principle, an investigation of their design and construction shows that all can be grouped into a few primary classes. By combining features of each of the groups and by effecting simple changes in details of special types it has been made possible to patent thousands of designs. It was only because the price of oil had increased on the Atlantic coast to almost a prohibitive price for its commercial and maritime use as a fuel during the past few years that hundreds of additional patents were not taken out.

It was but a few weeks after the oil tests began before the Bureau of Steam Engineering was requested by many inventors to test their special appliances. The attention of individual members of the board was also called to the merits of numerous designs of burners. It then became evident that unless it were possible to classify the burners and test only representative types of each group the experiments would extend for an indefinite period. A general examination of the patent taken out clearly showed that the important elementary principles governing the designs of every satisfactory oil burner are comparatively simple and few, and that the most efficient burner for any purpose is, in general, the simplest piece of mechanism, using the least amount of steam or air for atomizing purposes.

The various schemes for superheating the atomizing agent or for converting the oil into a gas before leaving the burner are of doubtful value. One has only to consider the amount of air requisite to secure complete combustion to realize the improbability of accomplishing this purpose within the burner itself. The development of the successful oil burner has thus been in the direction of cheapness and simplicity. Extended experiments, as well as careful research and calculation, have shown the imperative necessity of providing for proper sizes of orifices, and thus, simple as the oil burners may appear to be, the best of them represent in their development years of extended study, investigation and practical experience.

The ordinary user of liquid fuel should avoid the purchase and installation of any type of burner whose capabilities are advertised as extending beyond atomizing and supplying the oil uniformly and continuously. No burner should be used which has not been designed and manufactured by firms who have had experience in the work. The experienced and successful manufacturers of oil fuel appliances make but few claims for special burners. These experts recognize the fact that good workmanship, high quality of material, and extended experience in the general installation of oil fuel appliances are the determining factors in its successful use.

The actual form of the burner, independently of the general installation, will have but little influence in determining either the economical efficiency, the evaporative capacity, or the uniform burning of liquid fuel. For some purposes the single form of Y-burner, where the fuel enters through one branch and the spraying or atomizing medium enters through the other branch of the angle, might be found answerable. In every form of efficient burner, however, it is imperative that there be fitted valves of such design that a uniform and small supply of oil be admitted and that the pressure of the spraying medium be absolutely under control.

Simple Types Most Efficient.

In selecting the desirable form of burner for practically any purpose the essentials demanded are: A design capable of easy installation and operation, and a form of construction that will permit the rapid examination and quick renewal of parts. From various causes it will be found practically impossible to prevent foreign substances occasionally choking the burners, even though the liquid fuel before reaching the burners is heated and made to pass through a series of strainers. Any form of burner which does not permit rapid examination and clearing out of all foreign substances is unfitted for marine use.

The board found that there existed upon the part of every expert a tendency to install too few burners. As the clogging of these burners will occasionally occur, the only means of subjecting the boilers to uniform conditions is to have an installation of reserve burners, so that the extra ones could be quickly thrown into use. When it is considered that the cost of installing a few extra burners is trifling as compared with the total cost of an oil fuel installation, there should be no hesitancy in providing a sufficient number of burners, for a reserve appliance may secure a more uniform evaporative efficiency, as well as a greater output, and will help overcome some of the serious objections that have been experienced in the use of liquid fuel.

One of the special advantages claimed for the use of liquid fuel, that the work of the fireroom force is not only lessened, but made less onerous, will only be realized by an installation wherein there is a reserve of burners. All the burners should be so installed that their flame should point somewhere near the center of the furnace, and special care should be taken that the oil product is not injected directly upon a heating surface.

There are two methods of burning oil which are mentioned in this report, and which the board considered it not advisable to investigate, for the reason that either of the methods required use of purified oil rather than crude oil or petroleum. One of these is the method of open pans, hearths, drips, cups, &c., while the other is a gas furnace in which oil is first reduced to gas and then burned. The use of crude oil or petroleum in either of these arrangements of apparatus, while possible for a short length of time, is not satisfactory as a continuous working method of forming combustion, and, therefore, can not be regarded as efficient or practical.

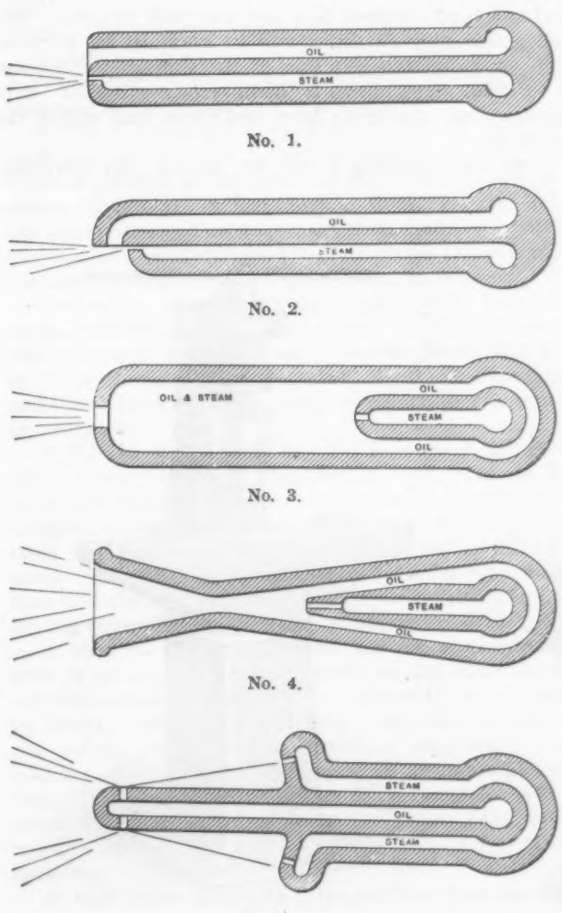
Types of Burners.

To classify properly the remaining types of burners into distinct groups it was deemed desirable that the

multitudinous numbers and varieties of design should be arranged either in accordance with some ruling form of construction or by reason of requirements of operation. After a careful analysis of various types, it was observed that five general classes would cover practically all of the main features of construction, and from these five classes various modifications could be made, as herewith illustrated.

These five classes of oil burners may be thus grouped: 1, Drooling burner; 2, atomizer burner; 3, chamber burner; 4, injector burner; 5 projector burner.

Drooling Burner.—The name selected for this burner, while perhaps unusual, best expresses its function, as seen from the diagram; the oil simply oozes out, or properly



TYPES OF OIL BURNERS.

"drools" out, at the orifice over and on to the steam jet. In this case the drooling oil is simply carried away on a jet of flaring steam. The action is supposed to be as follows: As the steam issues forth it expands within the layer or film of oil which is being carried into the air of the fire box. It may be thought that this rather rough method of effecting vaporization would hardly be possible or satisfactory; yet, as large numbers of these burners have been, and are, in actual use, they cannot be regarded as crude or unsatisfactory.

Atomizer Burner.—In this burner the oil is brought through an orifice, from which it is swept off by a brush of steam or air. It is, in short, a principle made use of in an ordinary cologne sprayer. This form of spraying or atomizing is a very old invention, and its capabilities for spraying into a fine mist have long been appreciated.

Chamber Burner.—In this burner the oil and steam are more or less mingled within the body of the burner, and pass out from the tip or nozzle as a mixture, and then, owing to the expansion of the steam, the oil is rapidly broken into minute particles. Burners of this type are simple in construction and have been carried through a large range of design.

Injector Burner.—Burners of this type are analogous to the injector often used for boiler feeding and similar purposes. Here the steam and oil rising, each through its own passage, mingle within cone shaped passages, and as a mixture passes through a contracted nozzle, and then outward through a reversed flaring cone. Burners designed on these lines have the principle common to injectors in general, that they can draw or suck the oil to them and force the mixture of steam and oil outward at considerable velocity. Burners of this type have been in use for 40 years or more on the railroads of Russia and have become with that nation what might be regarded as a standard type.

Projector Burner.—In burners of this type the oil is pumped to the oil orifice and from there is caught by a passing gust of steam and blown off. This might be regarded as a subclassification of No. 2, the atomizer burner, except for the fact that the brush of steam is located some distance from the oil orifice, and this sweeping brush of steam, as usually constructed, is arranged to entrain a certain amount of air further to aid in spraying and in combustion. W. L. C.

An Experimental Monorail Road.

A monorail transit system, the invention of H. L. Tunis of Baltimore, Md., has interested capital to the extent that a 5-mile trial line will shortly be constructed from Baltimore to Ellicott City. It is promised that a speed of 100 miles will be attained, and if the tests prove as successful as anticipated the line will doubtless be extended to Washington. It is reported that unlimited capital is behind the invention, mostly from New Yorkers. Among those who are known to be interested are J. Coleman Drayton, John H. Ostrup, A. Norvale, Henry A. Seymour and George L. Upshur.

The cars will be of steel, will be narrower than the ordinary trolley or railroad car, and will rest on two single wheels or two trucks of two wheels each, arranged tandem under the center of the floor, the platform and superstructure being balanced upon them. The motive power will be steam, and the equipment will be contained in the forward part of the coach. The road bed will be a single rail laid as for ordinary steam or country trolley roads, and the cars will be prevented from toppling over when at rest by a guide on the top of the car bearing against blocks supported by an overhead structure. Great economy is expected in fuel consumption, both by avoiding the loss through repeated conversions of energy from one form to another and by greatly reducing friction.

The inventor has built an experimental road about 2000 feet long near his home at Windsor Hills, and has demonstrated the practicability of his ideas. The experimental car is driven by a 4 horse-power oil engine at a cost, it is said, of only about 10 cents per hour, and is capable of attaining a speed of 15 miles an hour, although the car weighs ½ ton. On the permanent road steam will be used, and the exhaust of the engine will probably be utilized in heating the car. The use of blocks instead of pulleys for steadying the car is believed to be perfectly allowable, as the friction of pulleys suddenly started up from rest would be considerable in any event, and the cars are so well balanced that when running the pressure will seldom exceed 1 pound on the blocks. It is possible that these blocks will be of wood, as the wear is so slight. The blocks are fastened to the cross pieces overhead so as to catch a shuttle like projection on the flat roof of the car. This projection is pointed at each end, and is of yellow pine planking about 5 or 6 inches high. It is rendered peculiarly pliable by means of springs and braces, so that it adapts itself to curves. Metal may be substituted for the wooden shuttle.

Injector Burner.—Burners of this type are analogous as the Monorail Company, of which Wm. T. Levering is president; Ruxton Ridgely, vice-president; Gen. Jos. E. Seth, secretary and treasurer; H. L. Tunis, engineer and general manager, all of Baltimore. Only the rights for Maryland have been secured by the company.

Three New Morse Machines.

The accompanying illustrations show a gear testing machine, a straightening press and a bench center that have recently been brought out by the Morse Twist Drill & Machine Company, New Bedford, Mass.

Fig. 1 illustrates a machine for testing the running of spur gears. The gears are mounted on the studs projecting from the top of the bed, the left hand one being stationary, while the other is adjustable to give distances between centers of from 2 to 36 inches. The adjustable stud slide can be moved quickly by hand and clamped at any point, and a finer adjustment may be obtained by manipulating the hand wheel shown at the right, which connects with a screw engaging the stud slide wherever it may be clamped. The exact distance between centers is indicated on a scale on the top of the bed by a vernier reading to thousandths of an inch. The studs are 1 inch in diameter, and 1½-inch bushings are furnished with the machine. Extra studs from ¼ to 1¼ inches and bushings 1 5-16 inches or larger may be had on special order. Imperfections in gear teeth are easily found when tested on this machine. Its net weight is 450 pounds.

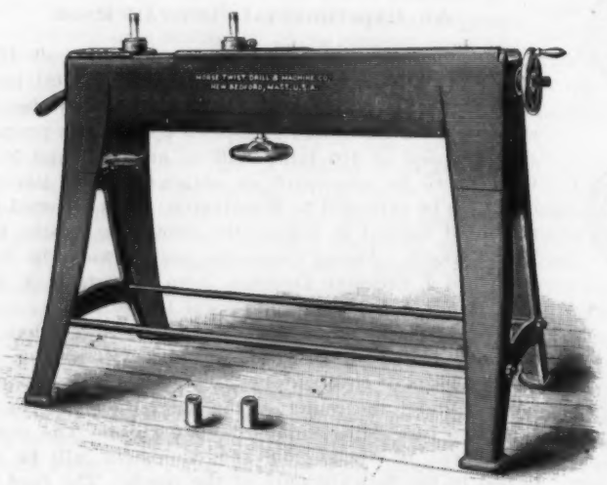


Fig. 1.—Gear Testing Machine.

Fig. 2.—Bench Center.

The bench center, shown in Fig. 2, will take stock 4¾ inches in diameter and 16 inches long. The head and foot centers are adjustable to any position along the base plate, and are clamped in the manner indicated. The gauge block can be moved wherever desired, and will show whether the work held on the centers is out of true or not. The tail spindle is of steel, ¾ inch in diameter, and has a taper hole to receive the detachable center. It is adjusted to the work by a coiled spring, which admits of considerable variation in the length of the piece to be centered. This machine weighs about 28 pounds and is intended to be placed on a bench or table.

The straightening press, shown in Fig. 3, is designed to straighten round or flat stock, either rough or finished, and is well fitted for machine shop work. The screw is 1¾ inches in diameter and runs in a bronze nut in the vertical slide. The thrust of the screw is taken by roller bearings 4½ inches in diameter. The screw is geared to the operating handle with a ratio of 6¼ to 1. One turn of the lever moves the pressure foot ⅛ inch. The vertical slide has a movement of 3 inches, and is arranged to take pressure feet of different lengths and shapes. The greatest distance from the top of the bed to the pressure foot is 6¼ inches, and the distance from the face of the column to the center of the foot is 3½ inches. The bed has a ⅝-inch slot to receive the V-blocks, and is 7½ inches wide and 36 inches long. It is stated that with the machine one man can straighten a 3-inch shaft with ease. The machine weighs about 1080 pounds.

Fig. 3.—Straightening Press.

Pawling & Harnischfeger's New Works.

The new plant of Pawling & Harnischfeger, Milwaukee, Wis., is now approaching completion, and will be in operation by January 1. It is situated on National avenue, just east of the Soldiers' National Home, and the land acquired is a fraction over 19 acres. Excellent shipping facilities will be obtained by its location adjoining the belt line of the Chicago, Milwaukee & St. Paul and Chicago & Northwestern railways. Five sidings enter the firm's land, and three lead within the buildings.

The main building is 350 feet square, and comprises the bridge, erecting and machine shops. In the power house, 44 x 105 feet, will be generated, the electric current for the operation of the machine tools, cranes, &c., also the lighting current, and there will be a complete air compressing plant. The foundry is 108 x 150 feet, and will have adequate side extensions for storage purposes. The pattern shop and pattern storage house are each 50 x 165 feet, one and three stories high, respectively, and will be of slow burning mill construction. The office building is 60 x 75 feet, three stories high. All foundations are of concrete, with walls of brick and structural steel. Saw tooth roof construction is used throughout. All buildings are arranged to permit extensions to triple the output of the plant should conditions warrant.

A system of septic sewage disposal is now being installed, and the firm will have its own system of water works. The machinery in its several old plants at Clinton and Oregon and Virginia and Florida streets will be transferred to the new works as rapidly as these are completed. The large amount of new equipment needed has already been ordered. The products by which this firm is best known to the trade are its cranes and hoists.

Modern Blast Furnace Construction.

From the Drawing Office Point of View.

BY I. G. BAYLEY. PHILADELPHIA, PA.

When the contract for building a blast furnace plant has been awarded the engineers, every preparation is made for getting out a complete set of drawings as quickly as possible. Many new men are taken on, and it is to the advantage of the office that these men are kept busy all the time. The drawings required and all necessary information should be at the finger ends of the men in charge, so that no time is lost, or plans be made over again on account of not knowing exactly what is required.

Before the general rush commences most of the calculations and that part which falls to the engineering department are gotten well under way.

1. *The General Plan.*—A general plan is then made on a large sheet about ⅛ or 1-10 inch to the foot scale, showing distinct outlines of the track system, furnaces, stoves, boilers, gas and air piping, stock bins and building foundations. This plan should be made as complete as possible, traced and several blue prints taken for distribution among the men for detailing, as follows:

2. *General Plan of Foundations.*—Stock bins, furnaces, boilers, engines, houses, &c., should be located with reference to each other. Various levels should be given in elevations and sections. Over all dimensions and the location of tracks should be shown to obtain proper clearances.

3. *Details of Foundations.*—To accompany No. 2. It must consist of elevations, sections and plan of furnace, dust catcher, boilers, retaining walls, giving center to center of columns, clearances of foundations, &c. Sections in detail must be made with reference letters to agree with general plan. The foundation bolts, chimney flues and the cleaning doors should be distinctly located. Coping stones for all purposes, &c., correctly shown.

4. *General Plan of Gas and Air Piping.*—A general plan of all piping should be made on one sheet in plan and elevations, because all clearances can more readily be found. Outlines of cold blast, hot blast, cut off and gas valves, cleaning doors, downlegs, supports, trusses, columns, chutes, &c., should be shown in plan and elevations. This plan must be made very complete with dimensions and to scale. Several blue prints being taken, work can be provided for a number of men for further detailing.

5. *Cold Blast Main.*—In faint outlines show the blowing engines, stoves and buildings, and, if possible, an exact plan of the piping. If this cannot be done, reference should be made to sheet No. 4, or in one corner a small scale view can be shown. Detail bends, supports, columns and trusses on this sheet, also notes of reference as to sheets and riveting. All valves, nozzles and flanges, with faint outlines of other piping to show clearances, can be given on this sheet. Over all dimensions can be given on smaller scale view.

6. *Hot Blast Main and Bustle Pipe.*—In faint outlines show the plan of the furnace bosh and columns, stoves and buildings. Give the general plan and elevations, with full dimensions. Show the supports, hot blast valves, tuyere stock connections, drop valve, hangers and bands. It should include a cross section through the pipe, showing double line of brick work. Notes in reference to plates, pitch and size of rivets, calking, &c., must be given. Details of hangers, rods and bands, brackets, valve casing and supports must be shown, and in faint lines for clearances all other piping, &c., must be indicated. On bustle pipe show the cleaning doors and nozzles for monkey tuyeres.

7. *Gas Mains.*—These drawings should include stove, boilers and roaster, gas main with outlines of buildings in general plan on a small scale; detail bends and elbows, &c., similar to sheet No. 6; section through the piping, showing single brick lining; chutes with outline of car on track; stove, boiler and roaster gas valves in outline; reference notes and other piping and obstacles to be shown in faint lines for clearances.

8. *Chimney Flue.*—If underground, the chimney flue can be detailed on sheet No. 3, giving longitudinal sections showing brick lining, doors, &c.; otherwise show general plan of buildings, &c., in outline as for plans described above, stoves and boiler connections in detail, cleaning doors, bends and elbows, section showing brick lining, reference notes, columns, brackets and supports.

9. *Water Supply, Sewer System and Details.*—A complete plan should be given, locating the main from the reservoir, river or source of supply to the pumps, stand pipe, &c. Foundations of retaining walls and buildings shown in outline for clearances. Show pump connections, furnaces, stoves, roasters, stand pipe, cooling racks, condensers, &c., in faint lines. Detail various drops and offsets in elevation. Show cast house sprinklers, stove and boiler valves supply, and drain piping on a larger scale. Terra cotta, cast iron and wrought iron piping may be shown in one heavy line, full for supply, dotted for drain or discharge.

10. *Steam and Water Piping.*—Under this head should be prepared two complete plans, one showing live steam and exhaust, and the other water supply and discharge. Faint outlines should be made of the boilers, engines, pumps, traveling cranes, &c., for clearances. Blue prints must be obtained of the engines, pumps and auxiliary machinery, showing the exact location and sizes of all inlets and outlets for steam and water, from whoever has the contract for these, and be shown in faint outline in plan and elevation. Cross sections and elevations should be made on a larger scale to insure proper clearances and more easily obtain correct measurement of valves, elbows, tees, &c. Steam and exhaust, water supply and discharge can be shown by one heavy line, with signs and symbols for valves, tees, elbows and cocks.

11. *Cast House Foundations, &c.*—Refer to sheets Nos. 2 and 3. Make a general plan, locating columns, furnace, dust catcher, &c., in faint lines; coping stones and top of foundation walls in full heavy lines above ground, dotted heavy lines below; cross sections through piers and walls on a larger scale, with reference to location on the plan. Column foundation bolts should be marked. Furnace retaining wall and furnace foundation can be shown on this plan, showing columns and base ring in faint lines. Cross section, showing brick work of different grade and quality, water space, with sewer connection, &c., around furnace.

12. *Cast House Structural.*—This comprises a general plan, with outline of furnace casing, elevation and details of connections, gable end, columns, shoes and foundation bolts, rafters and purlins, riveting, corrugated sheeting, trap door in roof for furnace bell to pass through during erection, and detailing of roof around furnace shell.

13. *Engine and Pump House Foundations.*—Correct dimensions of blowing engines, high duty, circulating and feed pumps, feed water heaters, air compressors, water purifiers, condensers and electric machinery must be obtained. They must then be assembled in convenient locations, with clearance space between walls and each other, when the correct size of house can be obtained. General plan and details of walls can be made as described under No. 11 for cast house foundations. Engine foundations showing wheel and crank pits, draining for waste oil, foundation bolts and washers can be detailed on larger scale.

14. *Engine and Pump House (Structural).*—This should show a general plan and elevations, with details of gable end, trusses and columns, foundation bolts and washers, brackets for traveling crane track. Cold blast main and steam piping show in faint lines to clear bracing, &c.

15. *Traveling or Erecting Crane.*—Cross section of engine house should be shown in faint lines, with crane in full. Show girders complete, wheels and truck, with outline of operating gear.

16. *Engine and Pump House Brick Work.*—Plan in section showing window and door openings, cold blast main and steam and water piping in fine lines. Elevations and end views showing large and small doors, windows and louvers. Openings for all piping, window and door sills, coping, walls and pilasters.

17. *Stand Pipe or Water Tank.*—General elevation.

plan and vertical cross section, showing plates, seams and riveting, details of plates and riveting at various points. Discharge and supply connection, drain pipe, manhole and ladder shown in general views and detailed on larger scale. Splice plates in bottom, angle iron and Z-bar stiffeners. Double angles at bottom and reinforce plates at discharge and supply connections.

18. *Stock Yard Foundations and Details.*—Retaining walls and piers for bins in general plan and detailed on larger scale. Show hollow walls for keeping ore in a loose state in winter months (steam piping shown in fine broken lines). Elevations showing levels and grading. Foundation bolts and washers. Cross sections with reference letters agreeing with general plan, taken at various points.

19. *General Arrangement of Bins.*—This is an important plan. Great ingenuity is required in arranging the track system and bin location on the most economical basis. A fine line drawing of furnaces, buildings and yard should be made from survey plans, locating existing tracks, &c. Under and over head track system, trestle work and general plan and elevation of bins in single heavy lines are shown. This plan, when traced and blue printed, will furnish enough work to keep several men busy in detailing.

20. *Details of Coke Bins.*—General plan, elevation and cross section. If complicated, an isometric view will assist in making clear. Detail various parts, gates and slides, columns, foundation bolts, &c., track girders and ties, sidewalk brackets, &c.

21. *Details of Ore Bins.*—General plan, &c., as outlined under details of coke bins. Show steam piping in fine broken lines; brackets for carrying same, protection plates, &c.

22. *Details of Limestone Bins.*—General plan, &c., as outlined under details of coke bins. Walks, ladders and brackets in general and detail for all bins.

23. *Incline Plane.*—Show in faint lines furnace and yard level and cross section through coke bins. On a small scale give correct elevation of plane. Show skip at top and tank at bottom in fine outlines. Detail trusses, track girders and ties at various points. Cross section showing double track. Stock car or skip must be plotted out on this plan to obtain correct tilting movement. Sheave wheels, shoes, pulley arrangement for lifting furnace bell and detail of base.

24. *Roasters.*—General plan and elevations. Cross sections and transverse, showing walls, poke holes, doors, gas and chimney openings, sidewalks and track system, chutes and hoppers, buckstaves, gas main and chimney flue in fine lines.

25. *Details of Roasters (Structural).*—General elevations showing columns, buckstaves and sidewalk, with outline of piping. Detail shoes, water cooled tie rods and various connections.

26. *Details of Roasters (Brick Work).*—Show gas, ore and chimney chambers, showing different quality of brick work, key and shape bricks, openings for doors, gas inlets and chimney connections. In faint outlines show these, also chutes. Dimension fully. Allow for expansion by inserting strips of wood.

27. *Details of Roasters (Castings).*—Top and bottom chutes, doors, poke hole doors and frames, gas inlets and nozzles, bell and hopper, saddles for gas main and chimney flue. Shields around I-beams.

28. *Roaster, Gas Main and Chimney Flue.*—Show roasters in fine outline, giving correct location of platform, sidewalk and brackets. In full lines show main and flue in plan and elevation. Show fans, castings and connection to other piping in faint outlines. Detail riveting and plates, bends, elbows and gas cut off valve easing. Locate cleaning doors. Seams to miss saddles and doors.

29. *Furnace Section.*—Sectional elevation and plan. Show tuyeres, cinder notches, bosh plates, bands and bosh walls in plan. In elevation give foundations, furnace level, hearth or crucible, bosh, belly, stack, throat or tunnel head and platform. Show tuyeres, cinder notch, plates, bands, supporting bars, brackets, columns, bustle pipe in section, tuyere stock, water pipe and trough in section, brackets on columns for these. Bustle pipe hangers and brackets or column extension if used. Mantle, bosh jacket, hearth jacket and column base plate in section. Over all dimensions, giving hights and diameters of plates and bands. Hearth and bosh, angle, diameters, stock line, &c. Brick work and packing space clearly shown. Furnace lines, top and bottom points of sweep.

30. *Furnace Bosh and Hearth.*—Make section of furnace on 1-inch or ¾-inch scale from bottom of hearth jacket to upper circle of plates or top point of sweep. Repeat all items given under heading No. 29, Furnace Section, which occur between these points, with fuller dimensions, and showing shape brick work, arches over plates, cinder notch coolers and tuyeres, opening for tapping, &c. In plan show plates, tuyeres and cinder notches. Give distance between plates and tuyeres. Show monkey tuyeres in plant and elevation.

31. *Furnace Details (Bronze).*—Cooling plates in plan, elevation and section, showing lugs, partition walls, taps and faint outlines of socket plates if used. Make table of dimensions to accompany them. Show tuyeres, tuyere coolers, cinder notch and coolers with adjoining cast iron work in faint lines. Monkey tuyeres and coolers.

32. *Furnace Details (Cast Iron).*—Cast iron cooling plates, showing coils. Table of dimensions underneath. Show bronze plates in fine broken lines in position in cast iron socket plates, which must be fully detailed in plan, elevation and section with table of dimensions below. Tuyere arch castings, furnace columns, base plate, water trough, circular water pipe, the latter two to have flanges, inlets and outlets detailed on larger scale. Brackets for trough and water pipe. Manifold connections sometimes cast on water pipe. Notes, finish marks and references.

33. *Furnace Details (Wrought Iron).*—Hearth jacket in plan, elevation and part development, showing riveting, splices, bands, openings for cinder notch and tapping hole. Bosh bands with diameters, splices and table of dimensions and locations underneath. Supporting bars for bands. Notes and references.

34. *Tuyere Stock.*—In broken lines show furnace bosh and bustle or belly pipe. In elevations and plan show general arrangement of stock, detailing flanges, ball joint, eyesight, blow pipe, adjusting spring and rod, connection to tuyere arch casting or hearth jacket. Notes, references, &c.

35. *Monkey Tuyere Stock.*—Outline of bosh wall and section through bustle pipe, with details as generally noted above.

36. *General Arrangement of Furnace Top.*—An important drawing. When complete can be traced and several blue prints taken, giving work to as many men. Make sectional elevation from stock line of furnace up, showing bell and hopper, platform ring and plate, columns and beams supporting bell levers, piston and weight rods, cylinders and trunnions, bearings for levers, supplementary hopper, bell and extension, chutes on wheels, track girder, head of incline showing skip or stock car in tipping position. Structural work to have artistic and workmanlike appearance. Care must be taken to have perfect arrangement for replacing bell. Shield with large door for scrap. In plan show track girders with erecting crane to miss bleeder pipe, which show in light lines. Distributing chutes, supplementary hopper and seal.

37. *Furnace Top Details (Structural).*—Plan and elevations, showing columns and shoes, beams, bracing, brackets and track girders. Castings shown in fine broken lines. General appearance to be considered. Detail traveling crane, distributing chutes and bell levers.

38. *Furnace Top Details (Castings).*—Cylinders, pistons, rods, bearings, seal, supplementary hopper and bell, showing lugs for lifting, stops, flanges and locking arrangement, counterweights. Parallel motion details, list of pins and bolts. Wearing plates on hopper and piping for cylinders, showing cushioning scheme.

39. *Furnace Platform.*—Plan showing upper and lower platforms, railing, ladders, splices, supporting beams, brackets, operator's house, incline plane clearances, rivets, &c. Elevation showing upper and lower platforms, railing and posts, operator's house, supporting beams, ladders, &c. Details of brackets, shoes and connections.

40. *Bell, Hopper, &c.*—General arrangement showing parts assembled. Hopper (with lugs for lifting, flanges,

finishing strips, coil piping cooling arrangement) in detail. Bell (showing facing or finishing parts, lugs and flanges). Hopper extension in plan, elevation and detail as for hopper. Platform plate, showing cut out for columns, diameters and thicknesses. Platform ring in plan and sections, showing flanges, holes for testing rods and holding down arrangement.

41. *Furnace Shell and Bosh Jacket.*—General elevation and longitudinal section, showing top circular angles, plates, seams and riveting, holes for monkey tuyeres, cast iron cooling plates and bronze plates, mantle beams and bosh jacket, showing seams, angles, riveting and holes for cooling plates. In plan show location of these holes and openings. Detail riveting, mantle beams, brackets, gussets and plate or box girder, with columns in fine lines to show connections. Make a section plan at top, locating supporting beams in outline, with steel work cut for them to pass through. Locate downcomer openings and seams to miss both.

42. *Downcomer, Dust Catcher, &c.*—Outline of furnace casing in broken lines. Show downcomer and dust catcher in plan and elevation, locating in reference to furnace. Detail columns, bell and hopper, riveting and plates, bleeder, valve and seat, lever and operating device.

43. *Hearth or Crucible Jacket.*—See item or drawing No. 33 if jacket is wrought iron or steel. Cast iron herewith described. Plan and elevation showing complete jacket, with details of various sections, showing flanges if bolted or lugs and bands or loops if otherwise. Cinder notch opening, with ledge for cinder trough and holes for holding cooler in place. Tapping hole, bands, water cooling arrangement, lugs for bands. Detail band splice, wedges and sections at various points.

44. *Gas Washer.*—General elevation and plan, showing body, gas inlet and outlet connections and water tank, spray pipe, cleaning doors and spouts, with adjustment for water levels.

45. *Stove Section.*—Sectional longitudinal elevation, showing checker work, combustion chamber, dome and openings. Sectional plans (three or four), showing checkers, lintel bricks, piers, combustion chamber and walls. Locate cleaning doors, air valves, chimney and cold blast openings, gas valve and hot blast valve openings, eyesights and piston blow valves. Section to represent different quality of brick. Notes, references and section diagram to represent quality of brick work.

46. *Stove Section (Equalizing Stove).*—Longitudinal and plan section, showing central flue and checker work, openings for inlet and outlet of hot blast. Cleaning doors top and bottom. Quality of brick. Notes, &c., as above.

47. *Stove Casing or Shell.*—Half longitudinal section and elevation around same center line, showing seams and riveting, dome, cleaning doors, eyesight and valves. Plan locating all doors, &c., specified in item No. 45 by degrees or feet and inches. Development of these openings top and bottom. Plan of bottom, showing seams, riveting and holes for grouting. Heavy plate work top and bottom where openings occur.

48. *Stove Casing (Equalizing Stove).*—Refer to items 46 and 47.

49. *Details of Stove Brick Work.*—Details fully dimensioned of dome brick, keys and squares, checkers, lintels, piers, &c., with their equivalent to a 9-inch brick marked on each. Reference numbers or letters to agree with corresponding marks on stove section brick work.

50. *Stove Bridge and Platform.*—General plan on small scale. Details of various parts. Upper and lower platforms, brackets, hand railing and posts, ladders. Show in fine lines stoves and cleaning doors, piston blow valves, eyesight, &c., to better arrange platforms and hand railing as regards clearances. Detail trusses.

51. *Chimney Valve.*—Either poppet or gate. If the former, show casing in broken lines, with stove and chimney flue or main. Detail valve seat, stem, water and air cooling arrangement. Blow off or relief valve can be attached to chimney valve, leading directly into chimney flue or main, instead of being attached direct to stove. Detail drum, hand wheel and brackets. Pulley, rope attachment and sheave bracket. If gate valve design is used, detail similar to cold blast valve, described elsewhere. Show relief valve in gate.

52. *Gas Cut Off Valve.*—General arrangement in plan and elevation, with details of valves, stem, lifting arrangement, drum, rope, windlass, sand seal, weights, sheeting and riveting.

53. *Stove Gas Valve.*—Sometimes with washer attachment, when water box must be shown with sliding door for cleaning and for water level adjustment, seal, flanges and drain nozzle with valve. Show outline of stove and ground level in faint lines. Nozzle of thin steel with central air supply pipe, rack and pinion, hand wheel, shaft, valve and seat. See that valve when closed clears gas opening door, which show in faint lines.

54. *Boiler Gas Valve.*—Either suspended or on pedestal, sometimes with gas washer attached (see stove gas valve). Outline of face of boiler, showing doors swung open for clearances, nozzle or burner of light steel work, guides, rack and pinion, hand wheel, collar on burner to adjust air inlet, automatic mechanism for operating collar. Notes, references, finish marks, &c.

55. *Snort Valve.*—Combination of levers mounted on same frame operating snort and relief, so that when one closes the other opens; stuffing box arrangement around shaft, guide pulleys, chain and ropes. Valve in general elevation, showing correct position in reference to engines. Detail brackets for pulleys.

56. *Cold Blast Cut Off Valve.*—A standard gate valve, Chapman design, sometimes used, or one similar to that at stove end of cold blast main may be used. Show flanges and calking strips.

57. *Cold Blast Valve.*—Sectional elevation showing valve, with small relief gate, rack, pinion, spindle inclosed in tube, operating sheave, flanges and calking strips.

58. *Safety Valve.*—Show cold blast in broken lines, valve complete on small scale. Detail body, flanges, calking strip, lever, weight and rod reaching to ground.

59. *Drop Valve.*—Hot blast main and part of bustle pipe in vicinity of valve in fine broken lines, with valve in general elevation full. Detail levers, guide, weight, parallel motion scheme. Show brick lining, flanges, &c., and calking strips.

60. *Hot Blast Valve.*—Elevational section showing valve complete, body and brick lining in broken lines. Detail valve and seat with water cooling device, spindle, cover, sheave and bracket, winding drum, hand wheel, weights, guide, gallows, and adjusting bolts for expansion of hot blast main.

61. *Stove Castings.*—Standard sheet. Cleaning doors large and small, round and elliptical, with and without shields, top cleaning door, eyesights, calking strips, air doors and cleaning doors combined.

62. *Piston Air Valve.*—Hydraulic, steam or air operating. Open frame work, piston, rod, flanges, calking strip. Stove in outline.

63. *Gas Opening Door.*—Front view and section. Stove in broken lines, showing calking strip, flanges, door air cooled, levers, hand screw, sockets, heavy flanges and body or saddle.

64. *Operating Gear for Snort Valve.*—General plan and elevation on small scale, locating valve, and direction of wire rope to cast house column. Number or letter pulleys on stoves or buildings and detail to correspond. Detail lever for operating and rack device.

65. *Boilers.*—Usually standard design from well-known maker. Chimney connection to chimney flue and face of boiler for gas valve must be obtained in detail.

66. *Boiler House or Shed (Structural).*—Elevation, plan and gable end. Gas main and chimney flue located in broken lines. Ventilators, purlins, rafters and columns in detail. If a house show openings for chimneys, mains and piping.

67. *Boiler Chimneys.*—Detail of chimney connection must be obtained from maker. Show stacks on small scale, with bracing between, guy ropes, ladders, &c. Detail riveting, lugs, ladders, dead men, and hood.

68. *Stove Chimney.*—General elevation on small scale, showing foundation and coping in fine broken lines, anchor plate ring and foundation bolts, base ring, base of chimney, sheets and ornamental top with trap doors for ladder to pass through. General section, showing brick lining, fire brick and packing space. Detail founda-

tion bolts and rings, seams and riveting, ornamental top and base.

69. *Chimney Stairway.*—Elevation of stack, ground line and stove platform in faint outlines. Spiral stairway to stove platform and straight ladder from there to top. Detail treads, railing, posts, ladder, risers and lower platform, notes, references, &c.

70. *Pig Casting Machine.*—General plan and elevation in single heavy line. Show track system with cars in broken lines for clearances, endless chain of molds, housing, pouring house, delivery end, clay wash or smoke furnace arrangement, whichever scheme is adopted, water tank, knocker arrangement and engine house.

71. *Pig Casting Machine (Foundations).*—General foundations of engine house, piers and delivery end, pouring house, &c., with details on larger scale showing foundation bolts and washer and outline of machinery.

72. *Pig Casting Machine (Structural).*—General elevation with details of pouring house, housing and delivery end. Water tank and details.

73. *Pig Casting Machine (Castings).*—Molds or chills, sprockets, chain, knocker device, pouring spout, driving mechanism and delivery end adjusting chutes.

74. *Ladle Repair House.*—Show in general and detail. Car in broken lines in position. Detail hydraulic ram, holding arrangement and outline piping to skulling ram or machine.

75. *Tapping Hole Gun and Jib Crane.*—Furnace in outline—*i. e.*, bosh and column—with jib crane and gun in heavy lines. Detail gun body, piston, filling hole and piping arrangement. Detail crane, connection to column, &c.

76. *Crushing Rolls.*—General arrangement, upper and lower hoppers. Car on track in fine lines. Rolls and housing, operating device and engine house.

77. *Crushing Rolls (Details).*—Several sheets required. Wrought iron on one, castings on another and driving mechanism. Detail housing, hoppers, rolls, shafting, bearings, pinions, bolts and foundations.

78. *Pig Breaker.*—General arrangement of yard, showing traveler in broken lines and pig breaker located.

79. *Pig Breaker (Details).*—Several sheets required as heavy castings are used. Detail foundations, table, rolls, framing, holding and foundation bolts.

80. *Cooling Tower.*—General arrangement and details. Water racks, air spaces, piping, brackets, columns and general supply.

81. *Gas Producers.*—Show general scheme on small scale, with loading platform and track in broken lines. Coal hoppers and rocking arms for automatic feeding, tubs, poke holes, cleaning doors, gas inlets, cast iron columns and riveting in detail.

82. *Coke Ovens.*—General arrangement of all ovens or part, showing loading and receiving tracks with cars and trucks in position, section showing oven with movable bottom and operating device for unloading, poke holes and doors.

83. *Coke Ovens (Details).*—Brick work, castings, movable bottom, truck, sprocket wheels and chain, miter wheels, shaft and table.

84. *Fans for Induced Draft.*—Engine, fan and housing furnished by standard maker. Detail hood, foundations for engines and fan, stack, bracing and dead men.

85. *Fan House and Foundations.*—General elevations of structural work. Plan of foundations and details on larger scale.

86. *Skip Car.*—Plan, elevation and end view, skip tank in fine lines. Timber lining, yoke, wheels (double flanged in rear), heavy plate work reinforced with bands, shafts and bearings.

87. *Skip Car Tank.*—Plate work water tight, close riveting, buffers at bottom, car in position in broken lines. Elevational section, yard level and lower end of incline in fine lines.

88. *Iron Runner.*—General plan, showing furnace in section, with tapping hole and cinder notch located. Cast house walls and cinder and iron cars in position. General scheme of runner in heavy lines, in plan and elevation, showing slope.

89. *Iron Runner (Details).*—Sections through main and branch runners, gates, stops, dead ends, lifting arrangement for gates and stops, flanges, bolts and spouts. Brick work in fine broken lines.

90. *Cinder Trough and Details.*—Hearth jacket and cinder notch in fine lines, with general arrangement of trough in full. Detail sections at various points, holding down bolts, brick lining and casing, flanges, &c. In broken lines show relation to drawing No. 88, Iron Runner.

91. *Iron Ladle and Cinder Car.*—These are usually from standard makers. Their sizes must be obtained for clearances to determine position of spouts for iron and cinder runners.

92. *Metal Mixer.*—Standard drawing from well-known makers located on general plan, drawing No. 1.

93. *Intake Pump House.*—General elevational section, showing water's edge and pumps in fine broken lines. Detail foundations, house, pump connections and foundation bolts.

94. *Doors, Windows, &c.*—Standard sheet of doors, windows, louvers, hardware, door and window sills, large and small doors, cast iron jambs and skylights for all buildings.

95. *Electrical Plan.*—Showing wiring for lights and hauling. In fine lines show outlines of buildings and tracks traced from other plans. Detail wiring, rails, switches and crossings, poles, switchboard, conductors, trolley poles, &c., and use convenient signs, with descriptive table, for incandescent and arc light, poles, &c.

96. *Ore Car.*—Electric machinery in outline. Scale platform, trolley pole, gate lifting scheme for ore bins, truck wheels, doors, opening and locking device, controller box, &c., in detail. General arrangement in two views on smaller scale.

97. *Hoisting and Conveying Machinery.*—Usually a sublet plan, showing cantilevers, docks or wharf in outline, with trucks or boats. Traveler, stock yard, bins and ore pile in plan and general elevation, making a neat and attractive drawing.

98. *Furnace Water Fittings.*—A general plan, section of bosh and development on bosh outside wall line is made in fine broken lines on a ½-inch scale, showing all the plates (cast iron or bronze), tuyeres, cinder notches, circular trough and water pipe, hearth jacket, manifold connections and columns. In heavy lines show the manifolds. The rest of the work is made in full heavy lines for supply piping and dotted lines for discharges. The valves, cocks, unions, elbows, tees, hose connections and gate valves are indicated by signs and symbols, with a descriptive memorandum in one corner of the sheet. Typical details must be made of supply and discharge connections, connections between plates, discharges into trough, showing supporting pipe, clips, U-bolts and reducers. Hose connections to tuyeres and cinder notches. Spray pipes for hearth jacket from water trough or main supply. Three-way cock scheme advised for blowing out plates or finding out which leaks. Gravity system for furnace water cooling can be used.

99. *List of Bolts, Washers, &c.*—Foundation bolts for buildings, stacks, tanks, engines, downcomers, gas washers, columns, &c., with washers and plates, cast or wrought iron, tabulated on this sheet.

100. *List of Castings.*—A useful sheet for the erector. Under proper heads tabulate all castings used on stoves, downcomers, gas and air mains, &c. Make outline diagrams where castings are rights and lefts. Give number of pieces required, numbers of drawing they are detailed upon and drawing showing their location, with reference lettters or numbers to agree.

Conclusion.

Gas engines and electricity have reduced the number of drawings necessary for a complete blast furnace plant.

No mention has been made of explosion doors, their use being a matter of discussion among blast furnace engineers. When used, it is generally at the top of the furnace, downcomer and dust catcher, gas washer, gas mains and sometimes chimney flue, when a detail sheet of doors is made to accompany them.

The equalizing stove described takes the place of equalizing pipes and valves, and has been proven a much better substitute.

This list has been compiled offhand from memory

only, so that there may be omissions of various parts. The main object, however, is for saving time in the drawing room, and to this end a few remarks in closing may not be amiss.

As far as possible make all drawings on the same scale, so that many parts can be traced, one from the other. Drawings should be all of one size, except the general plans. Much time can often be saved by making drawings direct on back or wrong side of tracing linen. All drawings, tracings and blue prints should be conveniently indexed, the card system of indexing being much preferred. A good checker is indispensable and has often been the means of saving thousands of dollars. Blue prints of valuable tracings should be taken at once for distribution among the men for detailing. Each draftsman should have a large sketch book in which to keep all figures, sketches and calculations.

Good light and ventilation go without saying, and smoking in the drawing room should by all means be prohibited; a draftsman has enough to worry him without being handicapped by the odor from tobacco and spittoons. One man should be responsible for numbering and putting on titles of all drawings, as a uniform appearance in these points tends toward making a neat and attractive piece of work.

Unsatisfactory Cuban Reciprocity.

Supplemental Treaty May Be Negotiated.

WASHINGTON, D. C., September 27, 1904.—The representations of numerous domestic manufacturers and exporters regarding the failure of the Cuban reciprocity treaty to afford the advantages to American trade which were predicted when the convention was negotiated have finally induced the Administration to consider the advisability of making a supplemental treaty with the island government. An investigation is being made by United States Minister Squiers in Havana the special object of which is to determine the exact effect of the reciprocity treaty upon the principal items of importation from the United States and the amount of additional reduction in the Cuban duties necessary to give American manufacturers a secure footing in the island's trade. When this information has been obtained it is probable that the State Department will undertake the negotiation of a supplemental convention.

The Treaty a Failure.

It is now freely conceded by the Administration that the Cuban reciprocity treaty has failed to aid American exporters because the reduction in duties on American products, as provided by the convention, is insufficient to offset the low cost of production of foreign goods controlling the market. Nevertheless, the treaty will cost the United States Government not less than $12,000,000 of revenue, which can hardly be spared at a time when customs duties are falling off rapidly, although our total importations show an actual increase, owing to the large amounts of free goods or goods paying low duties which are now being brought in. On the other hand, the convention has been of very great advantage to the Cubans, having stimulated their exports of sugar and cigars, and thus the philanthropic object of the Administration to aid the Cuban government has been carried out, although at a very heavy expense to the United States and with little or no incidental benefit to American producers. While admitting the failure of the treaty as a stimulus to imports of American goods into Cuba, Administration officials assert that the result is not due to any defect in the reciprocity principle, but simply to the fact that the concessions to the United States are inadequate.

Minister Squiers' Views.

The results accomplished by the reciprocity treaty during the first quarter of the current calendar years are described by Minister Squiers in a brief but significant report just received at the State Department. This report shows that Cuba's import trade has risen from $17,343,433 to $19,381,633, an increase of $2,038,200, in the first quarter of 1904, as compared with the same period of 1903. Of this amount more than one-third, or $735,298, was gained by Great Britain; more than one-fourth, or $558,993, by Spain, and more than one-sixth, or $298,607, by Germany. The United States ranks fourth in the amount gained, being credited with only $290,010. Thus it appears that the United States, with a concession of 20 per cent. or more on all its products, has secured but 14 per cent. of the normal increase in the business of the island, while Great Britain, for example, although competing at an apparent disadvantage, has obtained more than one-third of the total new business. In commenting upon these figures Mr. Squiers says:

> The imports into Cuba from the United States show an increase of but 3 per cent., while those from England, Germany, Spain and France increased 20, 21, 16 and 8 per cent., respectively, and I am unofficially informed that the Cuban exports to the United States have very largely increased.
>
> I never fail to impress upon the President and the Cuban merchants and planters with whom I come in contact the danger of reciprocity in the present uneven trade between the two countries, and that American merchants and manufacturers will not long support an arrangement which largely increases the market for Cuban productions and, by comparison at least, decreases the sale of our own. The situation is pretty well understood, and it will not be difficult to obtain from the Cuban Government a proposition for the admission of goods of American origin on a more favorable basis.

Ratification of a Supplemental Treaty.

Whether a supplemental treaty can be negotiated in time to be ratified at the coming short session of Congress is a question concerning which the State Department officials do not care to express an opinion at this time. Unless Mr. Squiers' view is too sanguine, it would appear probable that such a treaty could be concluded without much discussion, and might easily be presented to Congress next December. The matter of its ratification ought to prove comparatively simple in view of the fact that it is not proposed to reduce the Dingley rates any further on Cuban products, although certain inequalities in the present arrangement might be adjusted. Not involving important changes in our own tariff, the projected treaty would not encounter the opposition from sugar and tobacco interests which made it so difficult to secure Congressional approval for the original convention, and it is therefore quite possible that Congress may act favorably upon the matter at the next session. Should the treaty provide for no reductions in the rates on Cuban goods entering the United States, it would require to be ratified by the Senate only, hence the delay which would otherwise occur in the House would be obviated.

The State Department is advised that Minister Squiers has made very vigorous protests against the enactment of a bill now pending before the Cuban Senate providing for the repeal of all duties on agricultural machinery, implements and various other manufactures of metal. While at first glance it might appear to be of advantage to American manufacturers that these goods should be placed on the free list, our exporters have taken the view, which has been energetically urged by Mr. Squiers, that the present rates of duty are so low as to place no restriction on consumption, while the 20 or 25 per cent. reductions provided by the reciprocity treaty give the American producer some advantage over his competitors. The repeal of these duties would place all exporters on the same footing, and would deprive our manufacturers of the advantages accruing from the convention.

Nearly all the advantage gained by American exporters from the reductions of the reciprocity treaty was promptly lost by the 30 per cent. advance in the principal schedules made by the Cuban Government soon after the convention went into force. To follow this with a measure placing on the free list an important class of machinery and metal products which has constituted a very large percentage of our total exports to Cuba would, it is believed, fully justify the State Department in abrogating the Cuban treaty on 12 months' notice. Mr. Squiers is fully aware of the situation, and it is believed he has these facts in mind when he suggests that "the situation is pretty well understood, and it will not be difficult to obtain from the Cuban Government a proposition for the admission of goods of American origin on a more favorable basis." W. L. C.

The Iron Age

New York, Thursday, September 29, 1904

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Reciprocity with Cuba.

Our Washington correspondent sends us an interesting communication on the subject of the Cuban reciprocity treaty, which is far from working satisfactorily for this country. It appears that our manufacturers and exporters are so dissatisfied with the share of Cuban trade which they are now receiving that, upon their representations, the Administration is considering the advisability of endeavoring to secure modifications of the treaty, which will operate more directly to the advantage of this country. When the treaty was effected it was hoped that the business interests of this country would be able to supply a very considerable portion of the Cuban purchases of manufactured articles. The people of the United States believed that they were entitled to a much larger part of the Cuban trade than they had been able to secure in the past, partly because of our proximity to the island and partly because of the very great service we had rendered in assisting the Cubans to secure their political independence. Further, this country is the natural market for a very large part of the productions of Cuba, which consist mainly of sugar and tobacco. Under these circumstances, reciprocity with Cuba was expected to give very great advantage to the people of the United States.

The result of the workings of the reciprocity treaty has been decidedly discouraging, as shown by the statement made by our correspondent. Recent reports show that as compared with last year this country is securing only a slight increase in its export trade to Cuba, while European countries have effected large increases in their trade. This is certainly a result which is not in accordance with the expectations of the people of America. In the meantime we have afforded the planters of the island a very greatly increased market for their productions. No complaint is now heard from Cuba of the poverty of its inhabitants, but, on the other hand, all accounts show that business conditions are exceedingly satisfactory. It seems unjust to Americans to have the people of the island derive a large revenue from the sale of their products to the United States, and use the money thus secured for the purchase of manufactured articles in Europe, which could just as well be furnished by this country.

It may be claimed that the purchases in this country by Cuba would have been larger if prices had not advanced here, owing to the higher cost of production and the great demand for manufactured goods from our own people. This may be admitted, but only with regard to a few articles. On the majority of our manufactures prices have not been advanced, but have continued on about the same plane as they were at the time the treaty went into effect, when the rates made were regarded as satisfactory to our people and were believed to be sufficiently low to enable American manufactures to be exported to Cuba in larger quantities. The Cuban Government, however, is responsible for having made a change in the general rate of duty which had not been anticipated and which adversely affected our interests. An advance was made of 30 per cent. in the principal schedules, which divested the United States of much of the advantage which it expected to reap from the reciprocity treaty. It is now probable that a supplemental treaty may be negotiated for the purpose of securing to this country the preference in Cuban trade which was expected when the original treaty was signed. If, as our correspondent suggests, such a treaty does not involve any further lowering of American duties on Cuban products, it will stand a very good chance of being adopted quickly by our Government, as action then would simply have to be taken by the Senate. It is stated by the American Minister to Cuba that it will not be difficult to obtain from the Cuban Government a more favorable arrangement, as the situation is well understood. The Cubans certainly do not wish the treaty abrogated, as that would greatly curtail the American market for Cuban productions.

The effort is made in some quarters to discredit the general principle of reciprocity treaties because of the unsatisfactory working of the Cuban treaty. It is held up as a convincing example of the futility of making reciprocity treaties. Because the United States has failed to reap the advantage expected, an effort is made to convince the public that the principle is to blame. Instead of proving that all reciprocity treaties would be failures, it simply shows that very great care is needed in drawing up a treaty of this kind so as to secure advantage to this country under any circumstances that may subsequently arise. This is a point which seems to have been overlooked when the Cuban treaty was drawn.

The New and the Old Corporation Laws of Massachusetts

The new corporation law of Massachusetts, which succeeded the fine old law under which capital stock meant dollar for dollar in assets, and which was considered the standard of excellence because of its conservative and businesslike provisions, has been in operation one year. Its advocates point with much pride to the figures showing the increase in the number of corporations organized in the State and in the amount of capital stock of the new corporations. As compared with the last year of the old law the number of new corporations has increased from 257 to an even 1000, while the capital stock totals $66,600,000, as compared to $11,500,000 in round numbers.

So far as figures go the increase has been phenomenal, but the figures do not begin to tell the story. A great many of the new corporations will never do business. They are like the Maine corporations and those of other States where the corporation laws are very lax and permit about anything to be capitalized on paper. Good will, patents that are without market value, and services in organizing the corporation are represented by many millions of the $66,000,000. The $11,500,000 of capital incorporated under the old law meant real estate, machinery, stock on hand, and cash. It is doubtful if the first year of the new law saw much more actual cash, or its equivalent, go into Massachusetts corporations than did the old law. And if there was a net gain it was more than offset by the loss of prestige that the Massachusetts corporation has suffered since it was put into the class with those of States that also framed their corporation laws for the cash in the fees they could get out of new companies.

There is the comforting thought that when corporation laws become so lax everywhere that the amount of

capital stock means no more than the *ad damnum* placed in a writ by a cheap lawyer in an accident case, a reaction will surely come that will bring with it a return to the old-fashioned system of incorporating on a cash basis. Perhaps it will be a national corporation act, as exponents of that panacea believe, or it may be the individual action of various States. But whatever it may prove to be, it will be welcomed by all those business men who prefer conservative, businesslike methods in incorporating as well as in their other transactions.

Decreasing Danger of Panic.

Panic is the state of alarm into which a merchant is thrown when he has reason to fear that he cannot obtain from his bank, or from his debtors, the money which he must have to meet his own obligations. When a large number of merchants are affected in this way there is great excitement; very high rates are offered for loans and property is sacrificed in order to get immediate funds. The merchants who can get money are apt to get as much as possible; to draw out all their deposits, and even to borrow largely, and lock the money in their safes so that they can feel sure of having it when they need it. Of course when many merchants lock up funds like this currency disappears; when it comes out it is in response to a premium over checks, and in 1893 this premium was high enough to bring a large quantity of gold from Europe, although the fear of silverism in this country a few weeks earlier had contributed much to cause the panic and had promoted the export of gold.

Money, then, is the first requisite in a panic. It has been provided in England by authorizing the Bank of England to violate the Bank act. The actual violation has been necessary only once, and it has not been necessary to suspend the act since 1866, though the embarrassment of the Barings in 1890 was a far more threatening affair than the collapse of Overend & Gurney in 1866. In the latter case an acute panic was averted by the co-operation of the great London banks; an insolvency was prevented; a sacrifice sale of securities was avoided, and all solvent merchants had the assurance that they could get what money they needed; therefore they made no unusual demand for funds.

In this country we have a practice which is closely analogous to the suspension of the Bank act. When the banks lend money after they have reduced their reserves to the legal minimum the Treasury takes no notice of the fact if it is due to a legitimate effort on the part of the banks to relieve a stringency. In the summer of 1893 the reserves of the New York banks were below the legal minimum for more than two months, and two years ago this autumn the reserves of the banks in most of the reserve cities were below the minimum. But the Government took no action.

Co-operation of banks has also been highly developed. This chiefly takes the form of an emergency circulation called clearing house certificates, which are accepted between banks and leave them their current funds for the needs of their customers. This is an emergency circulation, or an asset currency, created outside the law. There are other forms in which the banks assist each other, and it is pretty well understood that solvent merchants are to be helped over periods of panic or stringency, and are not to be allowed to fail merely because they cannot get currency on their assets.

In the recent convention of bankers in this city the subject of panics was referred to by more than one speaker, and all were confident that their danger was diminishing. The above considerations show why this is true. Periods of dull business are not to be averted, but the danger of panic is far less than it was a quarter or half a century ago. It is to be remembered that the panic of 1893 was intimately connected with the question of the currency; it was not exclusively a financial phenomenon, but partly political, and that particular danger may never recur.

The business depression which commonly follows a panic is no necessary consequence of it. The two are usually associated because they have common causes. The panic of 1893 began with the collapse of the Cordage Trust, but financial matters had been very much shaken by the fall of the Reading Railroad nearly three months earlier. Both marked the collapse of speculations, and these both involved loss and created fear, so that they were causes both of bad business and of financial panic. The panic of 1884 was due in great measure to huge frauds which shook confidence, but business was dull for a time thereafter, as it was after 1873 and 1893, because there had been large losses in railroad, stock and land speculations. In each case one or two great failures shook confidence and disclosed losses which aroused alarm. Afterward there was a considerable period of dull markets, low prices, and what is often called recuperation, due, not to the alarm, which was soon allayed, but to the losses of the previous three, five or eight years, which the losers could no longer conceal even from themselves.

Speculation is carried to no such preposterous lengths as it was in England before 1826 and 1847, and in this country before 1837 and 1857, and consequently losses can hardly be so ruinous. Business will not be plunged into such deep depression. But in regard to the acute phenomenon known as a panic, there is ample reason for sharing the optimism of speakers at the convention of the Bankers' Association and believing that the commercial world has nearly or quite outgrown them.

The statistics of open hearth steel production in 1903, just published by the American Iron & Steel Association, show that the open hearth process continued to gain, even under general adverse trade conditions. In that year the production of Bessemer steel in the United States fell off 561,135 gross tons, or 6 per cent., as compared with 1902. Open hearth steel, on the contrary, showed a gain of 150,060 tons, or nearly 3 per cent. The open hearth steel production in 1903 was the largest on record, totaling 5,837,789 tons. It was almost exactly equal to the combined open hearth steel production of Great Britain and Germany, the former country having turned out 3,124,083, and the latter 2,716,859 gross tons in the same year. The combined production of Bessemer and open hearth steel ingots and castings in the United States in 1903 was 14,415,017 gross tons, against 14,826,092 tons in 1902.

CORRESPONDENCE.

Henry Cort's Burial Place.

To the Editor: Referring to the report of the meeting of the Mining Engineers, page 16 of the issue of *The Iron Age* for September 22, I am quoted as saying Henry Cort lies buried in Hampton churchyard; whereas he lies buried in Hampstead churchyard. Hampstead is a suburb of London, within 4½ miles of St. Paul's Cathedral. CHAS. H. MORGAN.

WORCESTER, MASS., September 24, 1904.

J. W. Rathbone, formerly with the Penn Steel Casting Company, has been appointed superintendent of the Birmingham Steel & Iron Company, Birmingham, Ala.

Notes from Great Britain.

The Market.

LONDON, September 17, 1904.—The promise of an improving market which was held out to us at the turn of the quarter, and which continued until the end of August, is not now being fulfilled. Business is undoubtedly less active. None the less, the market is the better for the "spurt." To begin with, employment is fairly brisk in the works, and the output is maintained, thanks to the contracts that were then booked; in fact, orders were placed to keep the works reasonably busy until the end of the quarter. Prices are firmer. With less anxiety as to the disposal of their output, bar makers are a little more independent of the consumer. This remark applies, however, to the marked bar makers; unmarked prices are still regarded as unremunerative. In the more finished lines there is a lull, and new business does not come in. For example, the sheet trade finds this to be the case, and the galvanized sheet makers meet with precisely the same experience, though they are getting easier prices. The gas strip makers have for a long time been hovering upon the verge of a reduction, but they have not yet altered their standard, which remains at £5 17s. 6d. to £6. There is not much doing in the tube trade, and its prospects are uncertain.

The trade in steel billets and sheet bars is normal, but the orders are not of large dimensions, although in the aggregate they reach a fairly large weight of material. Three weeks ago both the Germans and the Americans were feeling the market, but once again German quotations show an upward tendency, and the result is that British makers are less anxious.

Scotch Steel Trade and English Competition.

A meeting of the members of the Scotch Steel Trade Combination was held in Glasgow this afternoon, when the competition and cutting of prices on the part of one or two North of England makers in the angle trade were under discussion. It was agreed to make temporarily the price of Scotch angles £5 2s. 6d. per ton less 5 per cent., but for prompt specifications only, in order to meet the underselling in question. The recent price here was £5 5s. We also understand that negotiations are in progress with the object of bringing about a combination between the Scotch and English makers with regard to prices. With respect to ship plates makers report an active demand, but the price remains unaltered. Bars are unchanged.

Serious Wage Difficulty.

Last Saturday the iron workers employed throughout the area of the Midland Iron and Steel Wages Board, through their representatives, decided to give notice to terminate the sliding scale by which wages have been regulated since 1887. The decision is of great moment, the area concerned embracing Lancashire and South Yorkshire in addition to North and South Staffordshire, Derbyshire, East Worcestershire and Shropshire. The workers urge that in recent years the course of events in the Midland iron trade has militated against them, while developments in the North have favored the operatives, thus placing the workers of the Midlands at a further disadvantage. Since the sliding scale was adopted the number of Midland iron masters producing marked bars has declined, and this has resulted in a lower average selling price in the district and also in lower wages, which are regulated by the selling price. Concurrently, the tendency in the North has been to produce more high-class iron. Low priced iron rails, which formerly depressed the average, have now been replaced by steel rails, and the mills have been utilized for the production of bar iron. The men claim that the inequality caused by these displacements of trade shall be redressed. At present the rate of wages for puddling is 8 shillings 6 pence per ton, or 6 pence more than in the Northern iron trade; but it is contended that in the North the conditions are much more favorable, and that the extra output is a great deal more than equivalent to this difference of 6 pence. Midland employers have for some time paid 3 pence above the scale.

The basis of the Midland sliding scale is that for every sovereign which the manufacturer receives for the iron produced the operative shall have 1 shilling, together with a premium of 1 shilling 6 pence per ton, and an additional 6 pence to cover certain "extras," of which Northern ironworkers have the advantage. The selling price is ascertained at intervals of two months by an examination of the books of certain selected firms in order to obviate the difficulty of inspecting the books of all the 156 firms associated with the board. The agreement was that the employers should name half the firms on whose sales the ascertainment should be based and that the operatives should choose the other half. The operatives complain that this arrangement has not worked satisfactorily and that it has led to fluctuations out of all proportion to the actual variations of selling prices. Recently there was an attempt on the part of some of the employers to disembarrass themselves of the extra 6 shillings paid in lieu of Northern extras, and previously there had been trouble over the same point. The resolution passed by the men at the close of the proceedings was as follows: "That three months' notice be given to terminate the present sliding scale agreement and that the board's accountant be instructed to discontinue taking out the returns of selling prices from the books of the firms comprised within the audit after the two months ending October 31, 1904."

This notice to terminate does not affect the organization of the Midland Iron and Steel Wages and Conciliation Board, which will continue the work of settling disputes between employers and workmen, and also of settling wages by discussion and agreement, or by arbitration if necessary, without any stoppage of work. The reorganization of a new sliding scale on an improved basis will be an important part of the work of the board, and will be undertaken by the Wages Board, probably by consultation with the other iron-making districts.

The Ore Finding Experiments in Furness.

The chairman of the Electrical Ore Finding Company (Limited) writes: "I have to advise you that the operations being conducted by my company on the Barrow Hematite Steel Company's property, under an agreement whereby we receive royalties on the ore raised by them, have been successful in the location of hematite ore. The instruments having located certain spots that contained hematite in ground that had not been previously worked in any way whatever, bores were put down by the Barrow Hematite Steel Company, and hematite ore has been struck at a depth of 88 feet from the surface. This is within a few feet of the depth previously indicated by our operators."

Patent Search in Great Britain.

With reference to an editorial in *The Iron Age* recently, it may be well to state the actual position in which patentees find themselves as the result of the Patents Act of 1902. This act provided for an official search in connection with specifications for patents to ascertain if there had been anticipation. The section embodying this provision was to come into operation on a date to be fixed by the Board of Trade and was to apply only to applications made after that date. Some time was, of course, required for the purpose of making the necessary arrangements, including the required increase in the Patent Office staff. These are now complete, and the Board of Trade has issued a notice that the section of the act referred to will come into force on January 1 next year. The new departure is an important one. The act provides that, when a "complete specification" has been deposited by an applicant for a patent, the official examiner shall "forthwith," and in addition to the inquiries directed by the act of 1883,

Make a further investigation for the purpose of ascertaining whether the invention claimed has been wholly or in part claimed and described in any specification (other than a provisional specification) published before the date of the application, and deposited pursuant to any application for a patent made in the United Kingdom within 50 years next before the date of the application.

If it has been the application will be refused unless the applicant can amend it so as to remove the objection. The official search thus arranged for, and rendered imperative, will be paid for by an additional fee, which is not to exceed £1; and, upon the whole, the applicant will

get value for money. He will not, however, as might be imagined, secure the validity of his patent, as will be seen from the following sub-section:

The investigations and reports required by this section shall not be held in any way to guarantee the validity of any patent, and no liability shall be incurred by the Board of Trade or any officer thereof, by reason of, or in connection with, any such investigation or report, or any proceeding consequent thereon.

S. G. H.

The National Metal Trades Association.

CINCINNATI, Ohio, September 26, 1904.—The secretary of the Chicago Metal Trades Association has requested his members not to employ any help, excepting through the medium of the Labor Bureau operated by the association.

The Executive Committee of the Worcester Metal Trades Association held a meeting at the rooms of the association on September 22. The principal business transacted at this time was the arranging of a meeting of the association for Tuesday, October 11, to be followed by a banquet, at which time W. P. Eagan will address the members.

A. E. McClintock, secretary of the National Founders' Association, reports that there are more applicants than there are positions in the shops of his Philadelphia members.

The Employers' Association of Springfield, Mass., is having a phenomenal growth, while the Manufacturers' and Employers' Association of Trenton, N. J., has admitted 240 members during the past six months.

The boiler makers' strike at St. Louis, which has been on for about five months, has been declared off by a vote of the union, and the strikers are applying for work as individuals. No concessions of any kind were granted by the employers.

The secretary of the Manufacturers' Association of Pittsburgh, reports there is no change in the strike situation at the Pittsburgh Steel Foundry, and that the company has secured all the molders it needs, boarding them inside the works.

The strike at the Damascus Bronze Company's plant, Pittsburgh, because of the refusal to discharge a nonunion man, is still on. Nonunion molders have been secured to fill their places, and the strike is practically over, so far as the company is concerned.

Henry M. Leland, chairman of the National Metal Trades Association for the tenth district, reports peaceful relations existing all along the line in his district.

A Proposed Exhibition of Railway Appliances.

On September 8 a meeting was held of the General Committee of Arrangements for the American Railway Appliance Exhibition, to be held in connection with the International Railway Congress at Washington in May, 1905. This committee comprises 35 representative manufacturers of railway appliances, and has been empowered to organize and carry out the proposed exhibition. It is the purpose of the exhibition to place the product of the allied railway supply trade before those in attendance at the Congress, which will include the managerial heads of Government and independent railways of most of the countries of the world. This Congress meets once every five years, and will meet for the first time in the United States next May. The officials of the Congress were approached with the project of holding an exhibition of railway appliances, and gave their hearty approval. George A. Post is the chairman of the committee; Chas. A. Moore, treasurer, and J. Alexander Brown the secretary and director of exhibits. Manufacturers of railway appliances of this country will be invited to make exhibits and it is believed that the opportunity of showing their wares to an assemblage representing the bulk of the purchasing power for railway supplies the world over will cause a large number to take part. It will unquestionably be a stimulus to foreign trade and of no little benefit to the home market. The committee believes that the exhibition must be located on the "White Lot," a large acreage back of the White House grounds, stretching to the Potomac. It will require permissive legislation to obtain this concession as it is a Government reservation, and bills will be introduced in both Houses of Congress at the next session to grant the privilege of its use for this purpose.

OBITUARY.

ARCHER BROWN of the firm of Rogers, Brown & Co., pig iron merchants, died suddenly of heart disease on September 23, at his home in East Orange, N. J. He was 53 years of age, and was born in Otsego, N. Y. He was graduated from the University of Michigan at Ann Arbor, became a journalist in Cincinnati, rising to the position of managing editor of the *Gazette*, and in 1881 first turned his attention to the iron trade, forming a partnership with Wm. A. Rogers, which continued until his death. He is survived by a widow and four children.

IRA NELSON STANLEY, the inventor of a furnace for desulphurizing ore and joint inventor of the Stedman-Stanley regenerative furnace, died suddenly on September 23, at his summer residence at Freeport, L. I., aged 84 years. For a long time he was superintendent of the Newport Gas Company, Newport, R. I., and afterward became a member of the Brooklyn Clay Retort & Fire Brick Works, Brooklyn, N. Y., retiring from active business about ten years ago.

GEORGE S. HERBERTSON, a member of the foundry and machine firm of J. Herbertson's Sons, Cadwallader, Pa., died recently from paralysis, aged 57 years.

JOHN H. HORNE, president and founder of the J. H. Horne & Sons Company, manufacturer of paper mill machinery, Lawrence, Mass., died September 19, aged 75 years. Mr. Horne had a wide and favorable reputation as a pioneer and manufacturer of paper machinery. He leaves three sons, who are associated in the business.

The Pullman Company Resumes Operations.—CHICAGO, September 28, 1904.—*By Telegraph.*—The works of the Pullman Company, Chicago, which have been idle for some weeks, are being gradually started up on a nonunion basis at a schedule of wages ranging somewhat lower than previously. The company states that its failure to get business in the last six or eight months sufficient to run the plant profitably was due largely to the fact that the higher scale of wages which it paid, as compared with other manufacturing plants, had made it impossible to meet competition. The company has received orders for upward of 1000 cars and is starting up on a basis which its officials hope will permit it to become again a large factor in the car building industry. About 7000 men are normally employed, and approximately 1000 of these have been given work, and this number will be increased as the work progresses from roughing to finishing departments.

A New Rolling Mill for Canada.—T. M. Kirkwood, of Toronto, Canada, who recently visited the principal commercial centers of the States, has placed an order with Wickes Brothers, 113-115 Cedar street, New York, for a large rolling mill equipment, to be shipped to Winnipeg, Manitoba, Canada. Mr. Kirkwood proposes to make bar iron, shapes, &c., at Winnipeg, and has selected the most modern material for the construction of his plant.

The fact that the Lackawanna Steel Company is about to order two large steam blowing engines for its Buffalo plant has given rise to the report that the blowing engines driven by waste furnace gas had not proved a success. While they are not being run at the speed originally contemplated, they are working satisfactorily, minor troubles only being encountered. The new steam blowing engines are intended to replace some of the old blowing engines brought from Scranton, which are old and inadequate for the larger furnaces they are meant to serve. The object is to increase the daily capacity

considerably with the more powerful modern engines for the furnaces No. 1 and No. 2, which were partly built of materials brought from Scranton.

PERSONAL.

H. P. Richardson, 504 Park Building, Pittsburgh, has been appointed resident sales agent for the Van Dorn Iron Works Company, Cleveland, Ohio.

R. L. Richardson, who has been connected with the Pittsburgh office of the Westinghouse Electric & Mfg. Company for the past ten years, has resigned to accept a position with the Allis-Chalmers Company, Frick Building, Pittsburgh, as general correspondent and salesman. Mr. Richardson will assume his new duties October 1.

Albert Ladd Colby, assistant to president of the International Nickel Company, 43 Exchange Place, New York, has just returned to his office thoroughly recovered from the attack of pleuro-pneumonia which he contracted in St. Louis last July while installing his company's exhibit in the Department of Mines and Metallurgy.

W. C. Cronemeyer, advertising agent of the American Sheet & Tin Plate Company, Pittsburgh, will leave about October 1 for a three months' trip through the principal cities of Europe in the interest of that company. T. Vaughan Stapler will have charge of the advertising department during Mr. Cronemeyer's absence.

Henry E. Pridmore, manufacturer of molding machinery, Chicago, sailed September 24 on the "Lucania" for Europe. Mr. Pridmore is much in need of rest, and will remain abroad about a month.

W. E. Corey, president of the United States Steel Corporation, has returned from a brief vacation.

Three engineers of one of the best known builders of rolling mill machinery, the Duisburg Maschinenbau A. G. of Duisburg, Germany, are now in this country. They are Frederick Bonte, Max Hermann and Th. Kraemer.

James A. Burden, president of the Burden Iron Company, Troy, N. Y., has returned from Europe.

A Veteran's View of the Iron Market.

CINCINNATI, OHIO, September 24, 1904.—The iron market presents so many varied hues that possibly the views of one of our most prominent dealers, who has had an experience embracing a period of more than 25 years, will be of interest to the readers of *The Iron Age*. He says:

"The condition of the iron market at the present time is very peculiar, to say the least. Business is devoid of life and presents the general appearance of being forced, which is exactly the reverse of a healthy condition of affairs. This in our opinion is largely due to the fact that sufficient conservatism has not been displayed during previous years. The younger elements in the business have conducted it largely on a speculative basis, and now they are endeavoring to liquidate their indebtedness and retrench in every way possible. Instead of manufacturers supplying their needs from month to month, as was formerly the case, they were induced to make long term contracts, extending, perhaps, over a year's time, thereby increasing their obligations at the banks. When the time suddenly came that the banks ceased to do further business on this basis, which was the case about a year ago, people were obliged to liquidate as rapidly as possible, and this precluded their branching out into any new lines. The pace set by these speculators for several years was fast and furious and the American merchant did business to the full limit. Business of this character must be governed by the demand and is far more healthful in its nature with the speculative factor left out. When this is done a steady market will be the result, and if reaction should at any time set in the manufacturer will not be overstocked and will be in a position to buy his material at the low price. It will be necessary for the market to adjust itself naturally and become more steady before we can expect any upward tendency. It is simply folly for manufacturers of rails to keep the price of new heavy section rails at $28, when light section rails sell from $17 to $17.50 at the mill. At this figure heavy section rails should sell at not to exceed $21. If the railroads in making up their inventories show a fictitious price and quote rails at $28, when it should read $21, such inventories would be practically worthless.

"In our opinion the coming Presidential election has nothing whatever to do with present conditions, as no important issues are known to be at stake. The South has plenty of money and after the wheat and cotton crops have been realized on, we expect money to be easy, since everything points to a prosperous condition in this line. The railroads comprise a large proportion of the element that are liquidating. They have borrowed large sums on notes and are now waiting to ascertain the amount of their earnings before paying these bills. Then, if there is anything left over, they will invest it in new equipment and betterments. When they begin to spend their money freely you will find the general public following suit, which will have a good effect, and you will see the dawn of better and more prosperous times once again. The great fault of the American people to-day is that they try to grow in too rapid a manner. If a concern has been fortunate enough to secure orders for several years to come, the tendency is to add to the facilities so that the outstanding orders can be filled in as many months' time. Such is not the case in foreign countries, as they allow contracts to consume all the time necessary, and consequently their business flows on more naturally and is not forced or artificial. One great trouble with the iron market to-day is the fact that it is too much influenced by the fluctuations in Wall street. This should not be the case. Taking these facts into consideration, we do not look for any material advance for some time to come. Prices must adjust themselves naturally, and any advance to be healthful and beneficial must be spontaneous. A forced or artificial movement would be a misfortune, rather than a benefit."

Labor Notes.

At a meeting of the Chicago local of the Bridge and Structural Iron Workers' Union, held September 21, it was announced that wages 20 per cent. in advance of those paid in Chicago were being offered by bridge builders and structural iron contractors in Colorado, California and Oregon, where a shortage of such skilled labor is said to exist.

Machinists and boiler makers employed by the Elgin, Joliet & Eastern and the Chicago, Lake Shore & Eastern (Illinois Steel Company) roads, who went out on strike in May, when the management proposed a reduction in wages, last week decided to give up the strike and to apply for their old positions on the companies' terms. The companies have taken a number of men back, but retain the nonunion machinists and boiler makers who desire to remain.

The Chicago branch of the Sheet Metal Workers' Union ordered the metal workers out who were working for Geo. E. Dixon & Co. both on the First National Bank building and in their shops. This was done not because of any grievance in Chicago, but in an attempt to force the firm to come to the terms of the unions in the large contract which they have on the Wanamaker Building in Philadelphia. We are informed that the strike in Chicago is of small consequence and is not troubling the contractors in the least.

When the 300 union boiler makers of the Erie Railroad Company's shops at Susquehanna, Pa., reported for duty September 20 they found the doors of the shops locked and a placard announcing that their services were no longer required. Nonunion men have been put in their places, but the old men will be taken back if they apply as individuals.

MANUFACTURING.

Iron and Steel.

The property at North East, Md., recently sold by the McCullough Iron Company to George W. Cosden consists merely of the shells of the old wooden buildings and the ground around them. The plant and machinery had all been previously sold and removed, and no rolling mill existed there at the time of the sale. The McCullough Iron Company has concentrated all its plant at Wilmington, Del., where it is still operating in full its sheet mills and galvanizing works.

It was the plant of the Titusville Forge Company, Titusville, Pa., which was recently damaged by fire, and not the Cyclops Steel Works, as was reported. The plant of the Cyclops Steel Works is intact and running full.

The Howard Iron & Tool Company, Bellefonte, Pa., recently organized with a capital stock of $50,000, has taken over the plant and business of the Jenkins Iron & Tool Company and the business of the Union Forge & Supply Company. The plant, which is located at Howard, Pa., consists of a rolling mill and puddle mill, chain factory, foundry, implement factory, machine and blacksmith shops and several other buildings. The product will be bar iron, forged specialties, rakes, hoes, picks, brake rod jaws, &c. Frank Warfield is president and H. E. Jenkins secretary.

The Lorain Steel Company, Philadelphia, will erect an addition to its plant in Johnstown, Pa., at an outlay of from $85,000 to $100,000. The new building, which will be occupied by the shear, hammer and bolt departments, will consist of two bays, having a total frontage of 165 feet and a depth of 250 feet. The contract for the steel structure, erected, has been awarded to the American Bridge Company, and the contract for all other work on the building has been let to local contractors. It is expected that the building will be completed about February 1. There will be no addition to the present power plant.

The Fort Wayne Iron & Steel Company, Ft. Wayne, Ind., is adding to its plant a double puddling furnace and a new 200 horse-power waste heat boiler. The furnace is built and equipped according to designs furnished by the company, and the boiler is being manufactured and installed by the Bass Foundry & Machine Company, Ft. Wayne, Ind.

The Union Rail Company, Huntington, W. V., is preparing to roll brake beams and bulb beams, and is soliciting orders for these sections. The company states that it has orders ahead for several months for light steel rails running from 16 to 40 pounds in weight.

The Tidewater Steel Company's annual meeting was held last week at the company's office, at Chester, Pa. Directors were re-elected without change, as follows: Evans R. Dick, J. Howard Moody, George S. Graham, George McCall, Charles A. Porter, Charles T. Shoem, A. S. L. Shields, C. E. Stafford and F. W. Wood.

According to Toronto dispatches, a charter has been issued to the Northern Steel & Iron Company, Limited, which with a capital stock of $2,500,000 has been organized to take over and operate the Cramp Steel Works at Collingwood.

Four of the five Eliza furnaces and the Soho furnace of the Jones & Laughlin Steel Company of Pittsburgh are in blast. The idle Eliza stack is being relined and repaired and will be started up as soon as it is ready. The five Eliza furnaces and the Soho furnace give the Jones & Laughlin Steel Company a daily output of pig iron of about 2800 tons.

Operations have been resumed in all departments of the Ohio Falls Iron Company, New Albany, Ind., and the company began running double turn September 26. The plant was closed down pending the adjustment of the wage scale for the ensuing year, the conference between the committees representing the manufacturers and the Amalgamated Association of Iron and Steel Workers lasting three weeks. While the wage scale is lower than last year, concessions were made on both sides before a satisfactory agreement was reached.

General Machinery.

The Cayuta Mfg. Company, Sayre, Pa., recently incorporated, has taken over the business of the Sayre Moulding Company, Limited, which disposed of its wood working interests prior to selling its business. The Cayuta company has also acquired the stock of the Sayre Metal Company, which, however, will continue its organization for the present, and the business will be carried on as usual. The new company will manufacture light machinery and light railroad and other specialties. No new machinery will be required.

The Oswego Machine Works, Oswego, N. Y., will erect a new building on the plot recently purchased, the dimensions and character of which have not yet been determined.

The United Shoe Machinery Company, Boston, Mass., states that there is no truth in the report that it is to establish a plant at Buenos Ayres, Argentine Republic. The company has a selling agency at Buenos Ayres, but contemplates nothing further than that

The A. H. Nilson Machine Company, Bridgeport, Conn., has begun work on its new shops in that city. The building will be one story, 45 x 200 feet, with two ells each 30 feet square. It will be of fire proof construction.

The Bridgeport Foundry & Machine Company, Bridgeport, Conn., has been incorporated under Connecticut laws, with R. D. Whipple, president; Charles E. A. Thompson, vice-president, and Charles N. Choate, secretary and treasurer.

The Warrington Iron Works, a name under which George Warrington, Chicago, has been conducting a shipyard, machine shop and boiler works, has just been incorporated.

The Peerless Motor Car Company, Cleveland, has had plans prepared by Knox & Elliott, of that city, for a large brick and steel building, to be used as a machine shop. It will be located at the corner of Quincy street and the Nickle Plate tracks in that city. The company manufactures large gasoline automobiles, and its present plant is inadequate to take care of its business.

The business of the Aultman Company, Canton, Ohio, manufacturer of traction engines, harvesting machinery engines, &c., and that of the Arctic Machine Company, Canton, were placed in the hands of receivers September 22. Col. J. J. Sullivan of Cleveland was appointed receiver of the first mentioned company, and Earnest A. Pfleuger of Akron of the second mentioned company. The Aultman Company manufactured the machinery for the Arctic Machine Company, a separate concern, and the failure of the latter was due to the embarrassment of the former. As near as can be ascertained, the indebtedness of the Aultman Company is about $1,500,000. Of this amount $900,000 is evidenced by debenture bonds representing the liabilities of the previous collapse in 1893. Following the appointment of a receiver for the Aultman Company three Cleveland creditors of the company filed petitions with the United States District Court, asking that the company be declared bankrupt under Federal laws. A similar petition has been made by a Chicago creditor of the Arctic Machine Company. Colonel Sullivan, receiver for the Aultman Company, states that the plant will be continued in operation for the present at least.

The Springfield Machine Tool Company, Springfield, Ohio, reports that business is improving, and it has recently added to the forces in its foundry and machine shop. Several good sized orders have been secured lately, among them orders for shapers for foreign shipment.

The United States Circuit Court at Cleveland has ordered the sale of the plants of the American Clay Working Machinery Company, at Willoughby and Bucyrus, Ohio. The sale is one of the steps in the settlement of the affairs of R. C. Penfield. The decree of the Court allows bidders' credit for claims against the company. This makes it evident that the property will probably be purchased by creditors. No bid will be received for less than $100,000, and all bidders must deposit a certified check for $25,000.

Edgar H. Byer will erect a plant in Hagerstown, Md., for the manufacture of a drill press chuck, invented and patented by him.

The Arcola Buggy Company has been organized at Arcola, Ill. The company will erect a factory, 60 x 150 feet, which will cost about $2500. Considerable machinery will be required, including one 5 horse-power engine, one 10 horse-power boiler, 40 feet of 1 15-16 inch shafting, 12 pulleys, 5 x 6 x 10 inch, 200 feet of belting, emery wheel, forge, blowers, anvils, tools, drills, sand belts, bolting machines, hub boring machine, saws and auger and sewing machine. Correspondence may be addressed to Leslie Hundley, Arcola, Ill.

The James Leffel Company, Springfield, Ohio, is building a 2000 horse-power turbine wheel for the Japanese Government. A duplicate of this wheel was shipped to Japan last June, but it was destroyed by a Russian war vessel. The Japanese cabled to have it replaced as soon as possible. It is stated that the wheel will be used to drive a generator in a smelter plant where copper is prepared for use in the manufacture of war material.

The Superior Machine Company, Bowling Green, Ohio, manufacturer of oil well machinery, will erect a three-story building.

The Williams Electrical Machine Company, Akron, Ohio, has been incorporated with $100,000 capital stock by Harry A. Williams, J. F. Townsend, W. S. Mathias, T. R. Smith and J. V. Welsh. The company will make a feature of an electrically operated clutch, which will stop the shafting and machinery in a shop in case of accident. The company will establish a factory at Akron, and will manufacture other devices in addition to the safety clutch.

The Erie Railroad has placed with the Mark Flather Planer Company, Nashua, N. H., its entire order for shapers for the complete equipment of shops throughout its system.

The Auburn Concrete Machinery Company has been incorporated at Auburn, Ind., with $100,000 capital stock. The directors are Frank A. Borst, Sherman L. Kelly and Mentor Wetzstein.

The Wayne Gear & Machine Company has been incorporated at Fort Wayne, Ind., with $10,000 capital stock. The directors are Maurice I. Rosenthal, Joseph Freiburger and Lewis Frankel.

The new buildings to be erected by the Des Moines Bridge & Iron Works, Des Moines, Iowa, will include a power plant and foundry.

Power Plant Equipment.

Daniels Brothers, St. Ignace, Mich., have been given the contract for erecting the new power plant for their city. Arbuckle-Ryan Company, Toledo, Ohio, secured the contract for a 150 horse-power engine, boilers and piping for this plant, and the Westinghouse Electric Company, Detroit, will install the electrical work.

Contracts were let by the Asylum Commissioners at Richland Center, Wis., August 30 for the following work: Massillon Iron & Steel Company, 2746 feet of 6-inch and 418 feet of 4-inch cast iron water pipe; one deep well steam pumping engine, Luitweiler Company; four hydrants, with valves and special castings, Gould Company and the Rensselaer Valve Company.

The power house for the Cable-Nelson Piano Company's plant, which is to be built at South Haven, Mich., will be 25 x 50 x 60 feet and will require one 150 horse-power Corliss engine, three 100 horse-power boilers, feed water heaters, boiler feed pumps, 1000-gallon Underwriters' pump, elevator machinery and possibly electrical equipment for operating all machines of the plant. A. M. Worthington, South Haven, is the architect.

The stock in the Marinette Gas Engine Company, Chicago Heights, Ill., heretofore held by W. E. Canedy, W. G. Caldwell, Geo. H. Fuller and Earl Canedy has been purchased by T. C. Miller, G. V. Mitchell, J. H. Dalton and J. E. Schenck. The regular annual meeting of the stockholders of the company was held September 14, at which a new Board of Directors was elected as follows: W. O. Carpenter, Marinette; J. Walrath, Racine, Wis.; J. E. Schenck, Chicago; G. V. Mitchell, recently of New York, now of Chicago Heights; T. C. Miller and J. H. Dalton of Chicago Heights. Subsequently the new directors met and elected the following officers: T. C. Miller, president and treasurer; J. H. Dalton, vice-president, and G. V. Mitchell, secretary.

The Enid Electric & Gas Company, Enid, Okla., has been incorporated with a capital stock of $200,000. The incorporators are L. D. Turner and R. D. W. Holder of Belleville, Ill.; W. N. Horner of Chicago, John C. Moore and Clarence E. Rentchler of Enid. The company is in the market for some new boilers. Particulars may be had by writing to H. H. White, manager, at Enid.

The Geiser Mfg. Company, Waynesboro, Pa., is adding a foundry to the lately purchased gas and gasoline engine plant in Greencastle, Pa., and is generally increasing the capacity.

The Sherwood Mfg. Company, Buffalo, N. Y., manufacturer of boiler and engine supplies, has completed and is now occupying its new works at Elwood avenue and the New York Central Belt Line. There are two connected buildings and a foundry adjoining, all of brick and stone. The first floor of the main building, which is 50 x 120 feet, is occupied by offices, ware and shipping rooms and tool making department; the second floor for brass finishing, polishing, steam testing room and nickel plant. The converting building, which is 10 x 35 feet, is occupied by the pattern shops and electrical equipment. The foundry, which is 50 x 100 feet, is equipped with the latest appliances for making brass, bronze and aluminum castings.

The Cleveland Belting & Machinery Company, Cleveland, Ohio, is in the market for a 22 x 42 inch Corliss engine, Fishkill preferred; a 150-kw. direct connected 110-volt generator, and a 75-kw. belt driven 220-volt generator.

The Scottdale Foundry & Machine Company, Scottdale, Pa., which recently succeeded the firm of Kenny & Co., has just turned out its first Corliss engine, which we are advised contains some new features in construction in engines of this type. The company has established a selling agency in Baltimore.

The Westinghouse Machine Company, Pittsburgh, will ship this week to New York the third of the big steam turbines of the Westinghouse-Parsons type. These turbines are to be used in the subway. The one ready for shipment is of 7500 horse-power and weighs 750,000 pounds. Figures have been issued which show that there is now in operation throughout the world no less than 700,000 horse-power of the Parsons turbine, although its commercial history dates back but a few years. Orders for turbines are being received almost daily at the general offices of the Westinghouse Machine Company.

Foundries.

It is probable that the Central Iron Works, Syracuse, N. Y., will rebuild its plant which was recently destroyed by fire. Plans for the new building have not yet been drawn.

The Root & Van Dervoort Engineering Company, East Moline, Ill. is erecting a new foundry building, 70 x 150 feet, with cupola room and core rooms adjacent. The company will use its own power for this building and is installing a No. 4 Whiting cupola. Details have not yet been settled as to crane equipment.

The Globe Machine & Foundry Company, Frankford, Philadelphia, has placed a contract for the erection of a new foundry, 55 x 91 feet. No machinery will be required.

The Eaton, Cole & Burnham Company, Bridgeport, Conn., is adding a building 50 x 91 feet and two stories to its old iron foundry. This foundry, together with its addition, will in the future be used as a brass foundry. This is not a part of the company's new plant at the west end of the city, which is now completed.

The announcement made early in August that the American Steel Foundries had purchased a controlling interest in the plant of the Commonwealth Steel Company, St. Louis, Mo., has just been confirmed by Charles Miller, president. The purchase price is said to be $2,000,000. The product of the Commonwealth plant is principally railway castings.

The Union City Foundry Company, Union City, Pa., has erected a new foundry 70 x 100 feet, with a wing 50 x 90 feet. The equipment is being installed and the concern will do a general foundry business.

Bridges and Buildings.

The Missouri Valley Bridge & Iron Works, Leavenworth, Kan., has purchased property and will rebuild its plant, recently destroyed by fire, erecting a riveting shop, about 70 x 200 feet, and additional buildings for templet shop, blacksmith shop, power house, storage shops and the like. The company does not expect to spend very much for new machinery at the present time, as its former equipment was not greatly damaged by fire. An expenditure of about $10,000 will, however, be made for some new machines.

The Vincennes Bridge Company, Vincennes, Ind., has been awarded contract for the construction of seven bridges in Greene County, Ind., the aggregate cost being $6498.

Grainger & Co., Louisville, Ky., have the contract for erecting the steel superstructure for the Grandin Road Viaduct at Cincinnati, Ohio. The amount of this contract is $106,500.

Plans for the two additional arches for the Sixth avenue bridge at Des Moines, Iowa, are now being prepared. The arches will each have a span of 70 feet. No estimate of the cost has yet been made. The bridge as far as constructed has already cost the city $85,000.

The Pueblo Bridge Company, Pueblo, Col., secured the contract for building a steel bridge at La Junta, Col., the contract price being $7000.

The McClintic-Marshall Construction Company, Pittsburgh, has recently received from the Baltimore & Ohio Railroad Company an order for about 2000 tons of plate girder bridges. The girder spans vary in length from 75 to 110 feet. The portion of this order to be erected on the Pittsburgh division of the Baltimore & Ohio Railroad will be manufactured at the Pittsburgh plant of the McClintic-Marshall Construction Company, and the portion to be erected on the Baltimore division of the Baltimore & Ohio Railroad will be manufactured at the Pottstown plant.

Fires.

The plant of the Pacific Starch Company, Jackson, Mich., was burned last week, entailing a loss of $75,000.

Fire last week did $10,000 damage to the Central Iron Works, Quincy, Ill.

The box shop of the C. P. Darling Company, Providence, R. I., was destroyed by fire September 25. The fire also damaged a part of the plant of the American & British Mfg. Company.

Fire destroyed the still house of one of the chemical plants of the Cleveland-Cliffs Iron Company, at Gladstone, Mich., causing a loss of $75,000. The boiler plant and condensers were saved. The company carries its own insurance.

The power house of the water works system in Alexandria Bay, N. Y., was wrecked by an explosion of gasoline September 25. The power plant was built last spring at a cost of $12,000.

The daily press reports of the fire at the Bethlehem Steel Works, South Bethlehem, Pa., were greatly exaggerated. None of the important departments was destroyed, and the operation of the plant will not be interfered with. The buildings burned were of wooden construction and were occupied by the paint and carpenter shops.

Hardware.

Tennessee Hardware & Specialty Company, Troy, Tenn., has been incorporated with a capital of $10,000, Carroll P. Wilson being president and treasurer. The company will manufacture a number of specialties, including antidrip molasses can, line support and buggy seat brace.

The Metal Ware Mfg. Company, Bridgeport, Conn., has been incorporated, succeeding the former Metal Goods Mfg. Company. George Sanger is president and Thomas F. Cooney secretary and treasurer.

The Bryden Horse Shoe Company, Catasauqua, Pa., has increased its capital stock from $100,000 to $200,000.

The American Screen Door Company, Adrian, Mich., and Ironton, Mo., has increased its capital stock to $100,000, which has permitted material improvements in equipment and facilities at both plants, including the installation of a number of the latest and most approved machines. A rapidly growing business in screen doors and windows is reported.

The Hill Drier Company, Worcester, Mass., has begun the construction of a brick addition to its factory. The building will be 30 x 50 feet and four stories.

Landers, Frary & Clark, New Britain, Conn., are putting the factory building recently acquired of the New Britain Hardware Mfg. Company into shape for manufacturing, and will use it as an extension in the manufacture of their regular line of goods. A generator is being installed to furnish electric power.

The Reversible Self Sharpening Plowshare Company, Guthrie, Okla., has been incorporated with a capital stock of $25,000, the incorporators being W. J. Stewart, T. H. Ewing, C. C. Hackney

and others The company is putting up a factory and will begin with a working force of 20 men.

The Rigby-Clove Mfg. Company, manufacturer of harvesters, Pendleton, Ore., is considering the establishment of a plant at Portland, Ore. The company has not, however, come to a decision in the matter.

The Noake, Wheeler, Clough Company, Chicago, has reecntly been incorporated with a capital stock of $200,000 to make railway, carriage and cabinet varnishes and paints. The company has purchased the plant, good will and business of the Watts De Goiyer Company, which was established in 1840. The property covers 150 feet frontage on Illinois street and runs through to Indiana street, where it has similar frontage. The plant has been thoroughly overhauled and modernized. The officers of the company are Wm. H. Noake, president; Richard W. Clough, vice-president, and Edwin S. Wheeler, secretary and treasurer.

The Roderick Lean Mfg. Company, Mansfield, Ohio, has just purchased the National Drill Works, at Cambridge City, Ind., and will immediately erect two new buildings at the Cambridge plant. The National Drill Works make cultivators, weeders and grain drills, and these lines will be added to the harrows, cultivators, land rollers and hand carts made by the Roderick Lean Mfg. Company, giving this concern a line of machines both for tillage and seeding. E. O. White, who has been manager of the Cambridge plant since its inception 15 years ago, will be continued in that capacity and will be assisted by Maxwell Young, who leaves the Barnes Mfg. Company of Mansfield, Ohio, to take up his new duties at Cambridge.

The Morris Hardware Mfg. Company, Marion, Ind., has been organized with a capital stock of $20,000, fully paid. The officers are C. F. Morris of Marion, president; W. F. Coulter of Columbus, vice-president; B. F. Rybold of Saginaw, Mich., secretary, and C. L. W. Krause of Indianapolis, treasurer. The above parties with J. N. Phersis and J. E. Merrill are directors. All the stockholders (40 in number) in the company, with the exception of Mr. Morris, who is the proprietor of the Morris Hotel in Marion, are traveling salesmen. The company expects to have its plant in operation by December 1. A line of hardware novelties will be manufactured under patents granted to Mr. Morris. One of the articles is a sash lock, for which many merits are claimed.

H. C. Hart has disposed of his interest in the Union Cutlery & Hardware Company, Unionville, Conn., to his partners, Messrs. Ramage and Tabor, who will continue under the same style, the output of the company's product having recently been increased more than 100 per cent. Mr. Hart began making solid steel knife blanks for silver platers in 1878, and up to the present year has supplied the Meriden Britannia Company, Meriden, Conn., with these goods at the rate of 50,000 to 80,000 dozen a year. Last January the main building of the plant was destroyed by fire and the manufacture of the knives was abandoned. Since then Mr. Hart's company has manufactured a line of tin-plated goods in knives, forks and spoons. Mr. Hart will now devote his attention to the business of the American Wire Washer Company, of which he is president. This company manufacture washers from wire without waste of material by a process of which Mr. Hart is the inventor.

Miscellaneous.

The Cincinnati Iron Store Company, Cincinnati, Ohio, has secured property at the corner of Front street and Freeman avenue, Cincinnati, covering about one-quarter of a block, and will build thereon a warehouse which will be 75 x 250 feet in size, two stories high. The building will be of concrete, brick and iron construction, and will cost about $70,000. The building is to be equipped with all modern conveniences for the handling of material. The company will also remodel and equip its beam yard with cranes and travelers for the handling of structural material. Construction work will begin on the new warehouse within the next 30 days, and it is expected to have it completed by January 1, 1905.

The Chicago Tie Preserving Company's plant at Paris, Ill., which is now in process of building, is nearing completion, and it is expected will be put in operation early in October. This is the second plant which the company has established during the past few months. The first one, at Terre Haute, Ind., is now in operation and working with the zinc-tannin process. The capacity of this plant is about 30,000 ties per month. The Paris plant will have a capacity of about 60,000 ties a month. It consists of two treating retorts, 6 feet in diameter and 130 feet long, into which the ties, loaded on iron buggies, are run onto trucks laid in the retort. This plant will work with the zinc-creosote process, which has been successfully used in Germany for the past 30 years and found to lengthen the life of pine ties from 12 to 15 years in the track. This process is said to be somewhat more expensive than the zinc-tannin process, but is believed to be correspondingly better.

Hammond & Harcourt, Rockford, Ill., have opened a factory at 211-213 Walnut street for the purpose of manufacturing their button hole attachment for sewing machines. The factory will give employment to 25 men at the start.

W. L. Bruce, C. E., Yankton, S. D., secured the contract for constructing a water works system at Tabor, S. D. The contract calls for the building of a 2000-barrel tank, the construction of a 70-foot steel tower and furnishing and laying 1600 feet of mains.

The Morriss Hollow Concrete Block & Construction Company, Granite City, Ill., expects to build a factory at East St. Louis for the manufacture of the Morriss hollow concrete block. The building, if erected, will be 100 x 200 feet, and in it will be installed the machines necessary for making the Morriss block.

The Brackett-Wallace Mill & Grain Company, Sherman, Texas, is desirous of getting estimates on both a wood and steel elevator of 40,000 to 50,000 bushels capacity.

The contract for heavy chain cable for harbor use was awarded by the Cuban Government to Sussdorff, Zaldo & Co., New York, who purchased it from the West End Rolling Mill Company & Chain Works, Lebanon, Pa.

The National Battery Company, Buffalo, N. Y., is overhauling its plant, improving the efficiency and adding some new buildings.

Fisher & Son, wagon builders, Philadelphia, Pa., will build an addition to their plant 32 x 90 feet, three stories, which will be completed about December 1.

Alfred Roelker, Jr., has been appointed receiver for the General Metals Company, New York.

The American Seeding Machine Company, Springfield, Ohio, is preparing to erect a large warehouse at its Superior plant in that city. Plans and specifications have been prepared and the steel structure will be put up this winter.

The City Council of Sandusky, Ohio, has voted to issue $6000 bonds for the purchase of a new steam fire engine for the city.

The International Graphite Company, Niagara Falls, N. Y., has commenced the erection of a brick and steel addition to its plant, which will be 100 x 155 feet and 50 feet high. When completed and equipped with machinery it will practically double the capacity of the present plant.

The Amos-Pierce Automobile Company has been incorporated at Syracuse, N. Y., to manufacture automobiles. Nominal capital $1000. Incorporators, L. Amos, H. C. Pierce and G. H. Dennison.

Iron and Industrial Stocks.

The hesitation in the stock market observable at the time of last week's report was merely a temporary incident. Activity was shortly after resumed and prices were not only strong, but in some cases made quite sharp advances. The United States Steel stocks were particularly strong, which was due not only to the report of excellent earnings for the current quarter, but also to the belief that a conversion of the remainder of the preferred stock into second mortgage bonds might be arranged at a reasonably early day. The range of prices in active stocks during the week was as follows: Can, preferred, 45¼ to 47¾; Car & Foundry, common, 22 to 24; Locomotive, common, 25 to 26⅝; Pressed Steel, common, 31½ to 33½; Railway Spring, common, 22 to 23¾; Republic, preferred, 43¼ to 45; Sloss-Sheffield, common, 39 to 41; Tennessee Coal, 46 to 48¼; United States Steel common 16 to 18⅛, preferred 66½ to 70¾, new 5's 80½ to 82⅝. Some of these figures mark the highest prices reached in more than a year. Latest transactions in active stocks up to 1.30 p.m. to-day were as follows: American Can, preferred, 47; Car & Foundry common 23¼, preferred 81½; Locomotive common 26⅛, preferred 96; Colorado Fuel, 35; Pressed Steel common 33, preferred 80; Railway Spring common 23⅜, preferred 80; Republic common 9, preferred 45; Sloss-Sheffield common 40¼, preferred 88¼; Tennessee Coal, 47¾; United States Steel common 17⅞, preferred 71⅝, new 5's 82⅝.

Dividends.—The Pittsburgh Plate Glass Company has declared a dividend of 1½ per cent., payable October 1.

The Westinghouse Electric & Mfg. Company, Pittsburgh, has declared the usual quarterly dividends of 2½ per cent. on the assenting, nonassenting and preferred stocks, payable October 10.

The Westmoreland Coal Company, Greensburg, Pa., has declared a regular quarterly dividend of 3 per cent. and an extra dividend of 2 per cent.

American Shipbuilding Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable October 15.

Rhode Island Perkins Horse Shoe Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable October 15.

Tuthill Spring Company has declared the usual annual dividend.

E. W. Bliss Company has declared a quarterly dividend of 2½ per cent. on the common stock and 2 per cent. on the preferred stock, payable October 1.

John A. Crowley, formerly the New York representative of D. G. Gautier & Co. and the Philadelphia Forge Company, with offices at 32 Cliff street, has opened offices at 120 Liberty street, where he will sell crucible and open hearth steel and forgings. He will also act as Eastern representative of the Tioga Steel & Iron Company of Philadelphia.

The Iron and Metal Trades

The apparently conflicting reports which reach the public with reference to the condition of the Iron trade are less at variance when the situation is more carefully studied.

It is hardly necessary to repeat that the Pig Iron industry, with its open market, reflects most closely the shifting currents of the demand. It is here that activity has been sustained fairly well lately, quite a number of large buyers having entered the markets. Our correspondents at different points report quite an aggregate of orders, and note further inquiries. In the Pittsburgh district about 17,000 tons of Bessemer and Malleable Bessemer have been placed and two large consumers of Foundry Iron have covered round lots. In Chicago several blocks of 5000 tons each have been taken by melters and a considerable tonnage, in the aggregate, has been sold in smaller amounts. Cincinnati notes that the Cast Iron Pipe interests are feeling the market. New England continues to purchase at advantageous terms quantities of Foundry Iron rather large for that district. An important New England steel plant has just contracted for a lot of 12,000 tons of Pig Iron, and has taken some Basic Pig for prompt delivery. In Eastern Pennsylvania several lots of 3000 tons and upward of Foundry Iron have been disposed of, and there have been some sales of Basic Pig, at lower prices than those which have prevailed for some time past. The position of the Southern furnaces has not undergone any material change lately.

Pig Iron production is proceeding at an increased rate, but the very large interests express belief that the maximum will be reached early in November, and that then some blowing out may become necessary.

When we turn to the long and varied line of Finished products we encounter two currents of belief which tinge the views of Iron makers. A large number of them see a good deal of encouragement in the greater freedom with which specifications on old orders are coming in, and attach little importance to the fact that, on the whole, new business is slow. Others state that they did not expect any stimulation of the demand from the recent reductions in prices and do not look for the development of a buying movement until February or March. The course of events in the interval must determine whether that buying movement will start at the present level or whether the widespread views in the trade that a somewhat lower range of prices must first be reached are sound.

In Steel Rails, whose prices are admittedly out of joint with the rest of the market, no action is likely until December. No meeting has been called as yet for next month, nor will there be, according to very high authority.

Some good orders are looming up in different branches of Finished Iron and Steel, but they are not numerous enough to give all ample work. Export tonnage, practically confined to one interest, is pronounced good.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Sept.28, 1904.	Sept.21, 1904.	Sept.1, 1904.	Sept.30, 1903
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	$14.25	$14.25	$14.25	$15.75
Foundry Pig No. 2, Southern, Cincinnati	12.00	12.00	12.00	14.50
Foundry Pig No. 2, Local, Chicago	13.50	13.50	13.50	15.75
Bessemer Pig, Pittsburgh	**12.85**	12.60	12.50	16.35
Gray Forge, Pittsburgh	11.75	11.75	11.75	14.50
Lake Superior Charcoal, Chicago	14.75	14.75	14.75	19.00
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	*19.50*	19.50	21.00	27.00
Steel Billets, Philadelphia	*21.50*	21.50	24.00	27.50
Steel Billets, Chicago	22.50*	22.50*	22.00	28.00
Wire Rods, Pittsburgh	*26.00*	26.00	28.00	34.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	**11.00**	11.00	10.50	14.00
O. Steel Rails, Philadelphia	**12.25**	11.75	11.75	15.00
O Iron Rails, Chicago	**16.00**	16.00	15.75	17.00
O. Iron Rails, Philadelphia	15.50	15.50	15.50	18.00
O. Car Wheels, Chicago	11.00	11.50	11.00	18.00
O Car Wheels, Philadelphia	12.00	11.50	12.00	16.50
Heavy Steel Scrap, Pittsburgh	11.50	11.50	11.50	16.00
Heavy Steel Scrap, Chicago	**10.00**	10.00	9.50	13.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	*1.43½*	1.43½	1.48½	1.50
Common Iron Bars, Chicago	1.35	1.35	1.35	1.50
Common Iron Bars, Pittsburgh	1.30	1.25	1.30	1.50
Steel Bars, Tidewater	*1.41½*	1.44½	1.49½	1.73½
Steel Bars, Pittsburgh	*1.30*	1.30	1.35	1.60
Tank Plates, Tidewater	*1.51½*	1.54½	1.73½	1.78
Tank Plates, Pittsburgh	*1.40*	1.40	1.60	1.60
Beams, Tidewater	*1.51½*	1.54½	1.74½	1.73½
Beams, Pittsburgh	*1.40*	1.40	1.60	1.60
Angles, Tidewater	*1.51½*	1.54½	1.74½	1.73½
Angles, Pittsburgh	*1.40*	1.40	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	1.30	1.30	1.30	1.55
Skelp, Sheared Steel, Pittsburgh	1.35	1.35	1.32½	1.65
Sheets, No. 27, Pittsburgh	2.00	2.00	2.00	2.55
Barb Wire, f.o.b. Pittsburgh	2.05	2.05	2.05	2.60
Wire Nails, f.o.b. Pittsburgh	1.60	1.60	1.60	2.00
Cut Nails, f.o.b. Pittsburgh	1.60	1.60	1.60	2.15
METALS:				
Copper, New York	**12.75**	12.75	12.62½	13.50
Spelter, St. Louis	5.00	4.95	5.00	5.65
Lead, New York	4.20	4.20	4.20	4.40
Lead, St. Louis	4.12½	4.10	4.12½	4.40
Tin, New York	**27.85**	27.62½	27.07½	25.90
Antimony, Hallett, New York	7.00	7.00	7.00	6.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.49	3.49	3.49	3.99

* Nominal.

Chicago.

FISHER BUILDING, September 28, 1904.—(*By Telegraph.*)

It is evident that buyers have become convinced that prices on Pig Iron and Coke are as low as they will be and are buying freely, covering their needs as far in the future as sellers will permit at current figures, in some instances paying premiums for extended delivery. This is very different from the condition in finished products. Interviews with a number of buyers of Structural Steel and Plates, including several purchasing agents of the leading Western roads, indicate an almost unanimous conviction that prices will go lower before they go higher. As a consequence, buying in these lines is limited to actual current necessities, and these are trimmed down to the very lowest figure possible, the work being delayed wherever circumstances will permit. The same is true, but in a lesser degree, concerning Bars. As we have just intimated, Pig Iron is active and buyers are covering their requirements vigorously. One large melter bought 5000 tons for Chicago and 5000 for Milwaukee, and a number of other orders running from 500 tons up to 2000 or 3000 tons have been placed. The jobbing foundries, small and large, are also coming into line and buying both Iron and Coke freely. There seems to be more disposition this week than there was last to consider the 50c. premium for 1905 delivery asked by Northern producers. Pig Iron prices are unchanged but firm. Business in Rails and Billets is sleeping peacefully, with no signs of an early awakening. The Structural Steel market is dead this week, and the only event of any consequence is the closing last week by a large Chicago Bridge and Structural Iron works of the greater part of an order for 15,000 tons of Structural Materials and Plates, but the buyer declines to give the name of the mill getting the business. Plates are rather more active than Structural Materials, but buyers are doing little more than supplying immediate needs. De-

mand for Sheets is increasing, but prices have not strengthened materially. The Bar business is a little more active than it has been, but quite a good tonnage is moving, both from mill and store. This is also true of Merchant Steel and Agricultural Shapes. A good business is being done in Pipe and Boiler Tubes at or close to the official prices. This is an off week in Cast Iron Pipe, but prices are firm. Old Materials show both declines and advances, with declines in the majority. Coke is more active and prices are beginning to advance.

Pig Iron.—Inquiry on Pig Iron continues to be good, and a number of noteworthy sales have been closed, including 5000 tons to a Chicago melter, and the same quantity to a Milwaukee melter, and a long line of 1000 and 500 ton lots. Nearly all of this is Northern Iron. There is little evidence that the attempt of one Northern producer to advance prices to the basis of $13.75 for No. 2 has been successful. Some high Phosphorus Southern Irons are still being offered at 25c. below the $9.50, Birmingham, basis, but producers of first-class Southern Iron are holding to $9.50, and are securing a fair tonnage at that price. One producer announces that his sales of Southern for the week under review amounted to over 4000 tons. Some Basic Iron has been bought recently by one of the two large Chicago buyers of that product, but an attempt to make a contract covering the greater part of 1905 at current prices has not thus far met with success. If buyers of Plates and Structural Steel had been satisfied by the recent cut in those products a larger tonnage of Pig Iron than is now in evidence would have developed, but the slackness in the Structural trade is having an unfavorable influence on Pig Iron, owing to the reduced demand for Structural Castings. The prolongation of the Coal miners' strike in the Southern field is seriously curtailing production at a time when the demand is improving. The Iroquois Iron Company has fired up its "B" furnace, which has been idle since June, when it banked because of shortage in Ore due to the vesselmen's strike. Its output is sold nearly up to the end of this year. Prices are strong at the following figures, which show no change from those of last week. We quote:

Lake Superior Charcoal	$14.75 to $15.00
Northern Coke Foundry, No. 1	14.00 to 14.50
Northern Coke Foundry, No. 2	13.50 to 14.00
Northern Coke Foundry, No. 3	13.00 to 13.50
Northern Scotch, No. 1	14.00 to 14.50
Ohio Strong Softeners, No. 1	14.80 to 15.05
Ohio Strong Softeners, No. 2	14.55 to 14.80
Southern Silvery, according to Silicon	14.15 to 15.15
Southern Coke, No. 1	13.65 to 13.90
Southern Coke, No. 2	13.15 to 13.40
Southern Coke, No. 3	12.90 to 13.15
Southern Coke, No. 4	12.15 to 12.40
Southern Coke, No. 1 Soft	13.65 to 13.90
Southern Coke, No. 2 Soft	13.15 to 13.40
Southern Gray Forge	12.15 to 12.40
Southern Mottled and White	11.90 to 12.15
Malleable Bessemer	13.50 to 14.00
Standard Bessemer	14.25 to 14.75
Jackson County and Kentucky Silvery, 6 to 10 per cent. Silicon	17.30 to 19.30
Alabama Basic	.... to 13.15
Virginia Basic	14.10 to 14.35

Billets.—There is nothing new to report on Billets, except that Western buyers have received with ill grace a reduction in price that does not reduce. They had been buying Billets for a long time in this market at $22, or less, when the official price was $23, at Pittsburgh, and now that the official price at Pittsburgh has been reduced to $19.50, and the Chicago official price made $22.50, Western buyers are naturally not disposed to exert themselves greatly to lay in stocks. However, none can fail to acknowledge the fairness of charging actual freight instead of naming an arbitrary price, which includes only one-third of the actual freight cost from Pittsburgh.

Rails and Track Supplies.—The Rail business is stagnant and will doubtless continue so until after the annual meeting to be held in October or November, when prices for the coming year will be determined. The price of Standard Sections is unchanged on the basis of $28 for 500-ton lots and greater, with extras for smaller quantities. Light Rails sell at from $20 to $22 per gross ton at the mill. Angle Bars are lower at from $1.30 to $1.35. Spikes are now quoted at 1.60c. to 1.70c. in car lots from mill and as high as 1.85c. in small lots from store. Track Bolts are selling at 2.20c. to 2.25c., base, from mill, with Square Nuts, and 10c. to 15c. extra for Hexagon Nuts, with an advance of about 15c. for shipment from store.

Structural Material.—Business is oppressively quiet, with an extremely slow demand for current pick up materials. An important contract has just been closed, however, for the greater part of 15,000 tons of Structural Material and Plates by a large independent Chicago Structural Iron worker to supply material for bridges for the City of Chicago and for other purposes. Information as to the price paid and the mill is withheld. A large independent Western producer of Angles, 6 x 6 and smaller, and of other Structural Shapes in the smaller sections is doing a fair business at a reduction below the newly announced pool prices, and prospects are for a considerable increase in that business. Official prices are unchanged, as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.56½c., Chicago; Angles, 3 to 6 inches, ¼-inch and heavier, 1.56½c.; Angles, larger than 6 inches on one or both legs, 1.66½c.; Beams, larger than 15 inches, 1.66½c.; Zees, 3 inches and over, 1.56½c.; Tees, 3 inches and over, 1.61½c., with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices on Structural Materials are 1.80c. to 1.90c. for Angles, Beams, Channels and Zees, base sizes, with 1.90c. to 2c. for 18, 20 and 24 inch Beams; Tees, 1.85c. to 1.95c. These prices are for either random lengths or cut to lengths.

Plates.—While the reduction in price of $4 and $6 a ton is not as great as was expected, the buying public has sufficient respect for the strength of the Plate pool to take what concession it can get gratefully without clamoring loudly for further favors, and the result is that the current Plate business represents the full present demand for such materials, buyers covering their immediate needs freely and in some cases anticipating their requirements for 60 to 90 days ahead. A large tonnage of Plates, estimated at 3000 tons, has been placed by a local Structural Iron worker, but the buyer declines to make public the tonnage, price or mill. The prices on Plates are as follows: Tank quality, ¼-inch and heavier, wider than 24 and up to 100 inches wide, carloads, Chicago, 1.56½c.; 3-16 inch, 1.66½c.; Nos. 7 and 8 gauge, 1.71½c.; No. 9, 1.81½c.; Flange quality, any width up to 100 inches, 1.66½c.; Sketch Plates, in Tank quality, 1.66½c.; in Flange quality, 1.76½c. In other words, the special price of 1.30c., Pittsburgh, for Narrow Plates does not apply to either Sketch Plates or Flange quality. Following the cut in prices at the mills a reduction of $4 to $5 a ton has been made below former prices for shipment from Chicago warehouses by large jobbers here, making the new prices from store on Plates as follows: Tank Plate, in widths up to 100 inches, ¼-inch and heavier, 1.75c. to 1.85c.; 3-16 inch, 1.85c. to 1.95c.; Nos. 8 and 10, 1.90c. to 2c.; Nos. 12 and 14, 2c. to 2.10c.; No. 16, 2.10c. to 2.20c.; Flange quality, 25c. per 100 lbs. extra. From $1 to $3 a ton lower than these prices is being named by one or two producers of Plates 60 inches wide and less.

Sheets.—The Inland Steel Company has shown no more disposition to enter the Sheet market than it has at any time since the closing of its mill, being apparently satisfied to hold aloof from the losing fight among the many producers of this much contested product. The weakness in Sheets is just now more manifest in the heavier gauges than in the lighter, as is evidenced by the unusual spread of 15c. per 100 lbs. between 16 and 18 gauge quoted by most mills. We quote as follows, f.o.b. Chicago, in carload lots: Nos. 9 and 10, 1.66½c.; Nos. 11 and 12, 1.71½c.; Nos. 13 and 14, 1.76½c.; Nos. 15 and 16, 1.86½c.; Nos. 18 to 20, 2.01½c.; Nos. 22 to 24, 2.06½c.; Nos. 25 and 26, 2.11½c.; No. 27, 2.16½c.; No. 28, 2.26½c.; No. 29, 2.36½c.; No. 30, 2.46½c. Store prices are nominally as follows, with slightly lower prices being named on some of the heavier gauges when occasion demands: Nos. 8 and 10, 1.90c. to 2c.; No. 12, 2c. to 2.10c.; No. 14, 2.05c. to 2.15c.; No. 15, 2.15c. to 2.25c.; No. 16, 2.20c. to 2.30c.; No. 18, 2.30c. to 2.40c.; No. 20, 2.30c. to 2.40c.; No. 22, 2.35c. to 2.45c.; No. 24, 2.40c. to 2.50c.; No. 26, 2.50c. to 2.60c.; No. 27, 2.60c. to 2.70c.; No. 28, 2.70c. to 2.80c.; No. 29, 2.85c. to 2.95c. Galvanized Sheets show no change since last week, being offered at from 80 and 7½ to 80 and 10 discount, Pittsburgh, carload lots and larger, and selling from store here at 75, 10 and 5 and 75, 10, and 7½ discount from list

Bars.—We were in error in last week's quotation in stating that Soft Steel Angles were unchanged, as it now develops that the reduction of $1 a ton in Soft Steel Bars also applied to such Angles, Channels and Tees as belong to the Bar class. There seems to be a slight increase in demand on Soft Steel Bars, and one lot of 5000 tons is being figured on for delivery this year. The price of Steel Bars remains unchanged at 1.30c., Pittsburgh, or 1.46½c., base, half extras, Chicago, in carload lots. Current pick up business is fairly good on Soft Steel Angles, Channels and Tees. Bar Iron ranges from 1.35c. to 1.40c., base, half extras, Chicago, car lots. Hoops are unchanged in price at 1.71½c. rates, full extras, car lots, Chicago. Store prices are as follows: Bar Iron, 1.70c. to 1.75c., full extras; Steel Bars, 1.70c. to 1.75c., base, half extras; Hoops, 2.10c. rates, full extras.

Merchant Steel.—Some improvement in inquiry for High Carbon and Agricultural Steel is noticed, and there is a disposition on the part of some buyers to close up their season's needs at the new prices announced last week. We quote: Open Hearth Spring Steel to general trade, 1.85c. to 1.90c.; Smooth Finished Machinery Steel, 1.71½c. to 1.76½c.; Smooth Finished Tire, 1.66½c. to 1.71½c.; Flat Sleigh Shoe, 1.51½c. to 1.56½c.; Concave and Convex Sleigh Shoe, apparently unchanged at 1.66½c. to 1.71½c.; Cutter Shoe, apparently unchanged at 2.25c. to 2.30c.; Toe Calk Steel, 2.01½c. to 2.06½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car

lots; Railway Spring, carload lots, 1.71½c. to 1.86½c., with reductions for larger quantities.

Merchant Pipe.—The leading producer of Merchant Pipe announces that business is keeping up very well; that business for the month of August lacked only 50 tons of being the best month of 1904, and that sales exceeded those of August a year ago. The following list of discounts represents the prices quoted by the leading producer, car lots, Chicago, on current business, but buyers in the market for considerable tonnages can do a little better. Discounts are unchanged, as follows:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛ to ¼ inch	69.35	53.35	67.35	51.35
⅜ and ½ inch	73.35	61.35	71.35	57.35
¾ to 6 inches	77.35	67.35	75.85	65.35
7 to 12 inches	72.35	57.35	70.85	55.35

Boiler Tubes.—There is no change in either prices or situation in the Boiler market and business is slow. The following are discounts ordinarily quoted for less than car lots from mill for Chicago delivery. Prices are firm and unchanged, as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches	46.35	41.35	52.35
1¾ to 2¼ inches	58.35	41.35	40.35
2½ inches	60.35	46.35	43.35
2¾ to 5 inches	66.35	53.35	up to 4 in. 50.85
6 to 13 inches	58.35	41.35	....

Store business on Tubes is reported as showing some increase. The list of discounts named below are those that are nominally quoted for small lots from store, but better discounts are named to large buyers, and on orders of considerable magnitude. These nominal warehouse prices for shipment from Chicago store in less than car lots are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1¼ inches	42½	37½	10
1¾ to 2¼ inches	52½	35	37½
2½ inches	55	37½	40
2¾ to 5 inches	62½	47½	47½
6 inches and larger	52½	35	..

Cast Iron Pipe.—Nothing new has developed in Cast Iron Pipe, and no tonnages of moment have been placed. Prices are firm, owing to the strength in Pig Iron and Coke on the basis of $25.50 for 4-inch Water Pipe, $26.50 for 6-inch and heavier, and $1 extra for Gas Pipe. These prices, however, will be shaded on very large lots.

Old Materials.—It is evident that the large number of dealers who have been loading up with stocks for the purpose of disposing of them at higher prices later on are reaching the limit of their storing capacity. Consumers of Old Material are still holding aloof from the market, and in the absence of the keen speculative demand that has characterized the market for the past two months prices have softened considerably. The only list of any consequence on the market this week is that of the Chicago & Northwestern road for about 1300 tons. The prices below represent as a general thing prices obtained by railroads for tonnages sold during the last few days. They show reductions as follows: Old Iron Rails, 25c.; Old Steel Rails, 75c.; Old Car Wheels, 50c.; Iron Fish Plates, 50c., and also the following advances: Old Steel Rails, over 4 feet, 25c.; Iron Car Axles, 25c.; Steel Car Axles, 50c., making the new list as follows per gross ton:

Old Iron Rails	$16.00 to $16.25
Old Steel Rails, 4 feet and over	12.00 to 12.25
Old Steel Rails, less than 4 feet	11.00 to 11.25
Heavy Relaying Rails, subject to inspection	20.50 to 21.50
Heavy Relaying Rails, for side tracks	18.00 to 20.00
Old Car Wheels	11.00 to 11.50
Heavy Melting Steel Scrap	10.00 to 10.50
Mixed Steel	8.50 to 9.00

The following quotations are per net ton:

Iron Fish Plates	$13.00 to $13.50
Iron Car Axles	16.25 to 16.75
Steel Car Axles	14.50 to 15.00
No. 1 Railroad Wrought	11.75 to 12.25
No. 2 Railroad Wrought	10.75 to 11.25
Shafting	12.50 to 13.00
No. 1 Dealers' Forge	9.00 to 9.50
Wrought Pipes and Flues	8.00 to 8.50
Iron Axle Turnings	7.25 to 7.75
Soft Steel Axle Turnings	7.25 to 7.75
Machine Shop Turnings	7.00 to 7.50
Cast Borings	4.50 to 5.00
Mixed Borings, &c	4.00 to 4.50
No. 1 Mill	7.00 to 7.50
Country Sheet	5.00 to 5.50
No. 1 Boilers, cut to Sheets and Rings	8.00 to 8.50
No. 1 Cast Scrap	10.50 to 11.00
Stove Plate and Light Cast Scrap	9.00 to 9.50
Railroad Malleable	9.00 to 9.50
Agricultural Malleable	9.00 to 9.50

Quite a large tonnage of Old Material has changed hands in Kansas City, owing to the wrecking of an elevated road and rebuilding of a surface road.

Metals.—We quote as follows: Spelter is quoted at 5c. to 5⅛c. for car lots, and 5.25c. to 5⅜c. for small lots. Casting Copper is being held at 12¾c. and Lake at 13c. Pig Tin is now quoted at 29c. to 29¼c. Pig Lead is now quoted at 4.20c. for 50-ton lots, 4.30c. for car lots and 4.40c. to 4.50c. for less than car lots. Sheet Zinc is 6⅛c. for car lots of 600-lb. casks and 6⅜c. for less than car lots. We quote Old Metals as follows: Copper Wire and Heavy, 11¼c. to 11⅜c.; Copper Bottoms, 10c.; Copper Clips, 11c. to 11⅛c.; Red Brass, 9⅞c.; Red Brass Borings, 8c.; Yellow Brass, Heavy, 7¾c.; Yellow Brass Borings, 6½c.; Light Brass, 5⅞c.; Tea Lead, 4c.; Zinc, 4.25c.; Pewter, No. 1, 17½c.; Block Tin Pipe, 22½c.

Coke.—There are large interests in this market who believe that Coke has entered a boom period which will rapidly advance the price until almost double the present figures are received at the ovens. They argue that this advance will be brought about by the increased demand on the one hand and by the inevitable car shortage on the other. Railroads have been allowing their rolling stock to run down, and when Coal begins to move more actively there is fear that it will be almost impossible to get cars to move Coke into this territory. The prices have stiffened, and claim is made that it is impossible to obtain strictly Connellsville Coke at less than $1.90, at the ovens, with many sales being made at $2 and $2.10 for strictly 72-hour Connellsville quality, and from $1.85 to $2 for Virginia and West Virginia Cokes. Furnace Coke is now quoted at about $1.40, at the ovens. To all the above prices should be added $2.65 for freight for the Chicago price. There is no change in the Wise County, Va., situation, except that the demand has increased greatly owing to large tonnages shipped into the Birmingham territory. In spite of such conditions the Wise County producers are selling their Cokes as low as $1.75, at the ovens, which, with the $2.25 freight rate to Chicago, makes a $4 Chicago price. This is the minimum, however, and a good deal better prices are being obtained by some producers in that district.

Philadelphia.

FORREST BUILDING, September 27, 1904.

The last week of the third quarter of 1904 cannot be regarded with much satisfaction from a business point of view. In some lines there has been a better demand, but the general feeling is one of disappointment that the somewhat severe reduction in prices has brought little or no new business. There are some people who are optimistically inclined, and this is specially the case with dealers in Old Material, who are very tenacious in regard to the matter, and, in a measure, they seem to make their claims good. Steel Scrap of most descriptions is in fact bringing more money than they were earlier in the month, and still higher prices are talked about for almost all grades of Scrap Material. Pig Iron is about on an even keel, and commands last week's prices without much difficulty. Stocks in consumers' yards are rather light, and as the fall trade is bringing in a little more business, buying has been more spirited, although the tonnage has not been important. Sellers appear to be satisfied that ruling prices are all they can get, while buyers find that there is equally little chance for lower figures, and so the matter stands, without much indication of change in either way. The spectacular condition of the stock market seems to impress some people with the idea that because they get very little new business they must be behind the times. There is some basis, however, for the belief that the security market is being worked for some ulterior purpose, and that it does not reflect actual trade conditions in any degree. It is beyond doubt that the Steel trade will at some time make an advance movement that will surprise all records, but it is silly to make believe that the movement has already commenced and that in a few weeks, or even in a few months, everything will be going under a full head of steam. That may be the case, of course, for the "world do move," but there are no signs of it at the present time. Conditions to-day are of a preparatory character. The recent price reductions show how absurd it is, or would be, to talk of an immediate improvement. What is being done is preparatory work, such as trying to find out how much Iron will be required for consumption during 1905, how far costs can be reduced, and what level of prices will be most likely to secure a steady uniform demand. These matters are of vastly more consequence than sensational reports that have no foundation in fact. It is indeed very doubtful if any marked improvement will be seen during 1905. The effects of the debauch running from 1899 to the midsummer of 1903 have not been fully overcome yet, and while a severe panic was averted by a very narrow margin, it is quite certain that the recovery has not been so great as to permit of another period of high pressure such as during the period named. The country, led by Wall Street, has been expecting too much. For instance, we were to have over 625,000,000 bushels of wheat, we were to have more than 2,500,000,000 bushels of corn and 13,000,000 bales of cotton. It is agreed that the wheat crop will fall 100,000,000 bushels short of the estimate, and the most conservative revision of the corn crop admits a decrease of 300,000,000 bushels. Cotton is not far enough advanced to be closely figured on, but expert opinions favor an 11,000,000-bale estimate rather than one of 11,500,000. Con-

sidering the prices that will be realized the money value will be very great, but it is useless to ignore the fact that overestimating has been the rule, and, as this becomes clearer, it will probably result in a corresponding revision of estimates in other departments of business, and especially as regards the Steel trade. It is not to be understood that the Iron and Steel trades are likely to suffer further impairment because they have consistently refused to be "boomed" (except in Wall Street), and they are now in a very secure position. The water has been pretty well squezed out, prices are on a reasonably sure basis, production is not excessive, prices are under good control, and while no unusual improvement is in sight, it is believed that the trend will be in that direction during the remainder of the year, after which there may be new light on the situation which will warrant more sanguine expectations than is the case at the present time.

Pig Iron.—Sales have not been particularly heavy, although they have been numerous and at unchanged prices. The supply is none too large, but buyers can get all they want, with deliveries as promptly as desired. This is a healthy condition, but it would not take much increase in demand to change it to a much stronger condition nor much increase in supply to change it to one of a less favorable character. This, of course, implies that a change is liable to occur at any time, and so it is, although it is not imminent at the moment. There ought to be more and better buying during the next few weeks, but how it will turn out it is impossible to say. There is a good deal of inquiry, but indications for anything unusual in the demand are not particularly strong and a steady uniform movement is rather what is looked for. The possibility of the Alabama companies' furnaces being put in operation at an early date has a tendency to keep prices near to their present level, as there is no disposition to make a market that will encourage competition, which in any case is only a question of time. As a rule business is being done on the basis of $14.25 to $14.50 for No. 2 X Foundry; occasional sales are at a fraction above and below these figures, but a fair average would be as above stated. Mill Irons, both for Iron and Steel purposes, are rather quiet, but prices are maintained and makers claim that they have reached their limit in the way of concessions. For Philadelphia and nearby points of delivery quotations are as follows:

No. 1 X Foundry	$15.00 to $15.25
No. 2 X Foundry	14.25 to 14.50
No. 2 Plain	13.50 to 13.75
Standard Gray Forge	12.75 to 13.00
Ordinary Gray Forge	12.25 to 12.50
Southern No. 2 X Forge, rail	13.75 to 14.00
Basic	12.65 to 12.75
Low Phosphorus	17.50 to 18.00
Malleable Iron	14.50 to 14.75

Steel.—Business is rather light, although there are a good many orders for small lots, which command a little over $22. Large lots might be shaded a trifle, but as a rule $22 is a minimum figure for ordinary specifications of Open Hearth Steel.

Plates.—A considerable improvement is noted in the demand for Plates, some very good lots having been taken by several large consumers. There may be no great significance in this, but in the meanwhile it is a nice help to the mills, as they all need frequent orders to maintain the *statu quo*. Prices as usual and absolutely tight, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel, rectangular plates 24 inches wide and under.	1.43½	1.48½
Tank, Bridge and Boat Steel, over 24 inches wide	1.53½	1.58½
Flange or Boiler Steel	1.63½	1.68½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.73½	1.78½
Still Bottom Steel	1.83½	1.88½
Locomotive Fire Box Steel	2.03½	2.08½

The above are base prices for ¼-inch and heavier. The following extras apply:

3-16 inch thick	$0.10 per lb. extra.
Nos. 7 and 8 B. W. G.	.15 "
No. 9 B. W. G.	.25 "
Plates over 100 to 110 inches	.05 "
Plates over 110 to 115 inches	.10 "
Plates over 115 to 120 inches	.15 "
Plates over 120 to 125 inches	.25 "
Plates over 125 to 130 inches	.50 "
Plates over 130 inches	1.00 "
All sketches (excepting straight taper plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10 "
Complete Circles	.20 "

All the above f.o.b. Philadelphia.

Structural Material.—There is no special movement in this department. The day to day business is a little better, but no large lots are inquired for at the present time. There is a considerable amount of work on hand, however, so that the mills are pretty well employed. The new list of prices is as follows: Beams, Channels and Angles, 1.53½c. to 1.65c., according to specifications, and small Angles, 1.50c. to 1.55c.

Bars.—The reduction in prices to 1.30c., base, has had very little influence, although some mills report a better demand. These are the mills that maintained the schedule price and lost business, but can get a considerable amount of it at the new figure as long as it remains a tight quotation. The tonnage is not much larger, however, and it cannot be claimed that any advantage will be realized, unless it be that prices are more uniform—viz., 1.43½c. for carload lots for either Iron or Steel and the usual advance on part carloads.

Sheets.—Dull and disappointing both as regards price and demand, both of which are irregular and uncertain.

Old Material.—The Scrap market holds very strong and in most cases holders ask advanced prices. This is the reverse of what buyers have been expecting since they reduced prices for finished products, but for the present sellers seem inclined to make their own prices or to decline business. Bids and offers for deliveries in buyers' yards are about as follows:

No. 1 Steel Scrap	$12.25 to $12.50
Old Steel Axles	15.50 to 16.00
Old Iron Axles	18.50 to 19.50
Old Iron Rails	15.50 to 16.00
Old Car Wheels	12.00 to 12.50
Choice Scrap, R. R. No. 1 Wrought	15.00 to 15.50
Machinery Scrap	11.50 to 12.00
Low Phosphorus Scrap	16.50 to 17.00
Wrought Iron Pipe	11.25 to 11.75
No. 1 Forge Fire Scrap	10.00 to 10.50
No. 2 Forge Fire Scrap, Ordinary	8.00 to 8.50
Wrought Turnings	8.75 to 9.00
Wrought Turnings, Choice Heavy	10.00 to 10.50
Cast Borings	6.75 to 7.00
Stove Plates	9.50 to 10.00

Cincinnati.

FIFTH AND MAIN STS., September 28, 1904.—(*By Telegraph.*)

Pig Iron.—A degree more of activity is noticeable in the market this week. Particularly is this true in the matter of inquiry, which has shown marked increase. Most of the trade, it appears, is fairly well provided for during the remainder of this year, and are quietly reaching forward to the first half of next. The only exception to this is possibly the Cast Iron Pipe interests, who are understood to be interested in last quarter deliveries, and are buying considerable tonnage as opportunity offers. A great number of inquiries are received that cannot be closed, as they contemplate deliveries beyond the period fixed by the furnaces for which they will contract. Northern and Southern Iron still retain about the relative positions they have held for the past two or three months. We are advised of several sales that have been made at slightly shaded figures over last week's quotations, but not in sufficient tonnage to form a basis for a change in price. We understand that the Westinghouse people are in the market for about 3000 tons during the first quarter of next year for Pittsburgh delivery. Then there is the International Harvester Company, which is inquiring for 10,000 tons, whether Northern or Southern depending on the price. There is also an inquiry for 600 tons of Southern Iron from a Louisville concern. Several sales have been consummated during the week that have been for considerable tonnage. Probably the largest was the purchase by the American Car & Foundry Company of 11,000 tons of Missouri Iron for the manufacture of wheels. The American Bridge Company bought 900 tons of Southern Iron for delivery during last quarter, which, we understand, was at less than $9.25, Birmingham. There was a sale of 1000 tons of Northern Iron for Northern Ohio delivery, said to have been made at $11.40 at furnace, or $12.25, delivered, and 700 tons at $11.50, furnace, while 300 tons of Southern Iron was purchased on a $9, Birmingham, basis by the same concern. Citico furnace at Chattanooga has blown out for repairs, which will take from six weeks to two months. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$12.50 to $12.75
Southern Coke, No. 2	12.00 to 12.25
Southern Coke, No. 3	11.50 to 11.75
Southern Coke, No. 4	11.25 to 11.50
Southern Coke, No. 1 Soft	12.50 to 12.75
Southern Coke, No. 2 Soft	12.00 to 12.25
Southern Coke, Gray Forge	11.00 to 11.25
Southern Coke, Mottled	10.75 to 11.00
Ohio Silvery, No. 1	15.65 to 16.15
Lake Superior Coke, No. 1	13.15 to 13.65
Lake Superior Coke, No. 2	12.65 to 13.15
Lake Superior Coke, No. 3	12.15 to 12.65
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	$16.25 to $16.75
Lake Superior Car Wheel and Malleable	15.80 to 16.30

Coke.—The Coke market is strong and fairly active. Operators apparently feel that the bottom has been reached and any ripples on the surface are for the better. The best grades of Virginia Foundry have advanced 15c. and are now quoted at $1.75; 72-hour Connellsville Foundry is selling from $1.90 to $2.10, f.o.b. ovens.

Plates and Bars.—The demand for Finished Material is quiet and is far from showing the movement that was anticipated after the adjustment of prices. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.50c., with half extras; the same in smaller lots, 1.70c., with full

extras; Steel Bars, in carload lots, 1.43c., with half extras; the same in smaller lots, 1.65c., with full extras; Base Angles, 1.53c. in carload lots; Beams and Channels, in carload lots, 1.53c.; Plates, ¼-inch and heavier, 1.53c., in carload lots; in smaller lots, 1.80c.; Sheets, 16-gauge, in carload lots, 2.05c.; smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 3-16 and heavier, 1.63c., in carload lots.

Old Material.—There seems to be nothing new along this line. Quite a business is being done at all times, but in no considerable quantities. It is a difficult matter to establish a price schedule, but so far as can be ascertained there are no material changes to be made in last week's quotations. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $10.50 to $11.50 per net ton; No. 1 Cast Scrap, $10 to $10.50 per net ton; Iron Rails, $14 to $14.50 per gross ton; Steel Rails, rolling lengths, $10 to $11 per gross ton; Relaying Rails, $18 to $19 per gross ton; Iron Axles, $14 to $15 per net ton; Car Wheels, $10 to $10.50 per gross ton; Heavy Melting Scrap, $9.50 to $10.50 per gross ton; Low Phosphorus Scrap, $11.50 to $12 per gross ton.

Cleveland.

CLEVELAND, OHIO, September 27, 1904.

Iron Ore.—The movement of Iron Ore down the lakes seems to be on the increase for the time being. There is a lively rush of material, and the boat supply is not quite so abundant. Some shippers are finding a little better demand for Ore than was the case a short time ago. This is based upon a possible increase in the melt later in the year. The market is stable at $3.25 for Bessemer Old Range, $3 for Bessemer Mesaba, $2.60 to $2.75 for non-Bessemer Old Range and $2.40 to $2.50 for non-Bessemer Mesaba. The rates of carriage, due to the sharp demand for boats in other quarters, have stiffened, and there is some talk of better rates, but nothing definite has been done, the market holding at 65c. from Duluth, 60c. from Marquette and 50c. from Escanaba.

Pig Iron.—The effort of the producers to get a little higher price than was paid a month ago has caused less buying. Consumers do not care to buy into next year until after the election, and their needs for this year are fairly well covered. The one feature of most importance is the continued heavy specification against old contracts. Specifications are sometimes made in excess of the contract stipulations, and in other ways spot movements have indicated greater activity. However, by specifying in excess of their contracts the foundries are getting material cheaper than they would be able to do should they buy the surplus upon the open market. Prices are still quotable on the basis of $12 for spot shipments and $12.25 for future delivery for No. 2 Foundry. The movement in Bessemer and Basic has been nothing to speak of. The Malleable trade is about as it was, there being a fair demand, but nothing extraordinary. In Coke many of the furnaces and foundries have completed contracting for their supply for this year and will buy nothing in addition. The call for Coke at the present time, therefore, is not very vigorous. There are occasional complaints of a lack of cars. We quote Pig Iron prices, f.o.b. Cleveland, as follows:

Northern Coke, No. 1 Foundry	$13.35 to $13.60
Northern Coke, No. 2 Foundry	12.85 to 13.10
Northern Coke, No. 3 Foundry	12.35 to 12.60
Southern Coke, No. 1 Foundry	13.85 to 14.10
Southern Coke, No. 2 Foundry	13.35 to 13.60
Southern Coke, No. 1 Soft	13.85 to 14.10
Southern Coke, No. 2 Soft	13.35 to 13.60

Finished Iron and Steel.—A prominent Steel man says that, whereas Cleveland usually leads in a return to activity, it is lagging behind the procession at the present time. The market here just now shows that some of the buyers want to be on the safe side as to contracts, but are not yet ready to begin to use the material. This brings out some good contracts, but no real business, because the consumers have not started to specifying. This is particularly true of the Structural Material trade. In Plates this situation prevails in an aggravated form. The market has seen good buying, but no specifying. The orders have lately been added to. The consumers are of the opinion that the reduction will be short lived, since all of them look for a good period later on, when buying will be strong. They are merely protecting themselves against a possible future advance. The price holds at 1.40c., Pittsburgh. In Bars the recent reduction did not bring out any buying to speak of. This trade has been extremely backward. It has been a question whether a reduction would cause any considerable change in the situation. The results here have in part confirmed the belief of the Steel men that other than price considerations caused the hesitation. The price holds nevertheless at 1.30c., Pittsburgh, for Bessemer, and 1.35c., Pittsburgh, for Open Hearth Steel Bars. The Bar Iron situation has not changed. It has been a go-as-you-please affair for some time and continues in that same rut. There is an effort to keep the price up to 1.30c., Pittsburgh, but on good business the best that is done is about 1.25c. at the mill. Competition is responsible for this. The Sheet trade has been fairly steady and is about holding its own, but without any new features. Prices have not changed, being based on 2.50c. for No. 27 Black Sheets out of stock. There has been a little better situation in Rails lately. Some of the traction lines, making inquiry for material to finish some construction work this fall, have been faced with the statement that some of the larger mills are filled up for the next two months. There has been no material increase in the amount of business done in Billets as a result of the reduction. In all materials where the prices have been cut the companies have been making similar reductions on contracts held under the old prices, so that virtually all of the material being shipped now into this territory is on the basis of the lower prices.

Old Material.—The situation in Scrap is not changed much. The prices are nominally as they have been. We continue to quote, all gross tons: Old Steel Rails, $12; Old Car Wheels, $12; Heavy Melting Steel, $12. All net tons: Cast Borings, $4; No. 1 Busheling, $10.50; No. 1 Railroad Wrought, $12 to $12.50; Wrought Turnings, $7; Iron Car Axles, $16 to $17; No. 1 Cast, $10.50 to $11; Stove Plate, $7 to $7.50.

Pittsburgh.

PARK BUILDING, September 28, 1904.—(*By Telegraph.*)

Pig Iron.—Inquiries for standard Bessemer, Malleable Bessemer and Foundry Iron are heavier than for several months, and a large tonnage has been sold in the past week or ten days for delivery over balance of the year. We note sales of about 12,000 tons of standard Bessemer Iron for delivery over rest of this year at $12, Valley furnace, 4000 to 5000 tons of Malleable Bessemer for Western shipment at $11.50 to $11.75, Valley furnace. There have also been heavy sales of Foundry Iron, the Standard Sanitary Mfg. Company and Westinghouse Electric & Mfg. Company having bought upward of 10,000 tons for extended delivery. Prices on Foundry Iron are distinctly firmer, and Northern No. 2 is held at $11.90, Valley furnace, or $12.75, Pittsburgh. There is also some inquiry for Gray Forge Iron, and we note sales of about 1500 tons at $11.75 to $11.85, Pittsburgh. Some makers of Gray Forge are holding their Iron at $12, Pittsburgh. There is a good deal of inquiry for Iron for shipment in the next year, but as a rule furnaces are refusing to sell so far ahead at present prices, believing that the Pig Iron market will be higher before long. Standard Bessemer Iron for delivery over the rest of this year is held firmly at $12, at Valley furnace, but little lots for prompt shipment might be bought at 10c. to 15c. a ton less. The statement to be issued on October 1 by J. G. Butler, chairman of the Bessemer Furnace Association, will show a somewhat less number of furnaces out of blast on October 1 than on September 1.

Steel.—There are more inquiries for Billets and Bars in the market than at any time for several months, but as yet the actual tonnage of Steel being sold is relatively small. It is said the Steel agreement is on a better basis than ever before and that official prices will be firmly held. We quote Bessemer and Open Hearth Billets up to 0.25 carbon at $19.50, Sheet and Tin Bars, long lengths, $21.50, f.o.b. Pittsburgh district, to which freight to destination should be added.

Structural Material.—The Wabash Railroad is asking bids on 4000 tons of Structural Steel, to be used in the building of a new freight depot in this city. The building will be 800 feet long, 150 feet wide, two stories high, and of the heaviest Steel construction. It will be so arranged that cars can be run into the second floor, making easy the transfer of freight. All the large Structural concerns are bidding on this work and it is expected to be placed in a short time.

(*By Mail.*)

When the Billet Association met in Pittsburgh, on Monday, September 19, and fixed the price of Bessemer and Open Hearth Billets at $19.50 and long Sheet and Tin Bars at $21.50, it was intended to make Pittsburgh, Wheeling and Youngstown basing points; but when the work of making up a schedule of delivered prices was taken up it was found that this might lead to some complications, and after some correspondence among the different mills comprising the association, it has definitely been decided to make Pittsburgh the only basing point. All sales of Billets and Sheet Bars will therefore be based on $19.50, Pittsburgh, for Bessemer and Open Hearth Billets and $21.50 for Long Sheet and Tin Bars, to which actual freight from Pittsburgh to point of shipment must be added regardless of the location of the mill from which the Billets or Bars are shipped. In other words, if a sale of Billets or Bars is made at Cleveland, Ohio, the price would be $19.50 for Billets or $21.50 for Bars, plus the regular rate of $1.40 from Pittsburgh to Cleveland, regardless whether the shipments were made from the Pittsburgh mill or from the nearest point of shipment, which would be Lorain, Ohio. The Commissioner of the

Billet Association is preparing a schedule of delivered prices which is expected to be ready this week.

Confidence in the Iron trade seems to be slowly returning, and the volume of business in the past week has shown material increase, and on nearly all kinds of products. Demand for Pig Iron is especially active, and there have been actual sales during the past week of Bessemer and Malleable Bessemer Iron of fully 15,000 tons or more, and inquiries are in the market for a good deal more tonnage. Standard Bessemer Iron for balance of the year delivery is held firmly at $12, Valley furnace, or $12.85, Pittsburgh, and sales of fully 10,000 tons have been made at the above price. A firm offer of $11.75, at furnace, for a large block of Bessemer Iron for balance of the year delivery has been turned down. There is an urgent demand for Malleable Bessemer Iron, several large coupler concerns in the West asking prices on round lots, and some tonnage has already been sold on the basis of $11.50 to $11.75, at Valley furnace. There is also a good deal of inquiry for Foundry Iron, and some large tonnage has been sold in this market recently, the Westinghouse Electric & Mfg. Company and the Standard Sanitary Mfg. Company both having purchased large lots. Prices on Foundry Iron are a little firmer, and Northern No. 2 Foundry is held at $11.90, Valley furnace, or $12.75, Pittsburgh. Very little Southern Foundry Iron is coming into this market, as No. 2 is held at $9.50, Birmingham, which with $4.35 freight makes the price $13.85, Pittsburgh, which is prohibitive in competition with local Irons. There is some inquiry for Forge Iron, and it is held at $11.75 to $12, Pittsburgh.

Ferromanganese.—The market continues very quiet, most consumers being covered for a long time ahead. We quote foreign and domestic Ferro at $41 to $41.50, delivered.

Muck Bar.—While demand is quiet, prices of Muck Bar seem to be a little firmer and we quote best grades made from all Pig Iron at $23.50 to $24, delivered to consumers in the Pittsburgh district.

Rods.—Demand for Rods is quiet, consumers holding off placing orders until prices have been adjusted to conform to the lower prices on Billets. We quote Rods nominally at $26, Pittsburgh, but on a firm offer this would probably be shaded.

Skelp.—There is some inquiry for both Iron and Steel Skelp, and the mills are pretty well filled up for the next two or three months. We quote Grooved Iron Skelp at 1.40c., Sheared Iron Skelp, ordinary width and gauges, at 1.45c., while for narrow sizes and light gauges Sheared Iron Skelp has sold as high as 1.55c. Grooved Steel Skelp is held at 1.30c. and Sheared at 1.35c. to 1.40c.; all these prices are f.o.b. cars delivered to mills in the Pittsburgh district.

Steel Rails.—No large contracts have been placed, despite the report that the Harriman system had placed orders for 100,000 tons.

Structural Material.—It has developed that the Baltimore & Ohio Railroad has placed orders for 7000 tons of Bridge Material, 2000 tons going to McClintic-Marshall of this city and the balance to a New York concern. A good deal of Structural tonnage that was being held back waiting for prices to be adjusted is now coming out, and the mills are feeling the benefit of it. There has been a substantial increase in Structural tonnage within the past week, and the outlook is better than for some time. We quote: Beams and Channels, up to 15-inch, 1.40c.; over 15-inch, 1.50c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.40c.; Angles, 8 x 8 and 7 x 3½ inches, 1.50c.; Zees, 3-inch and larger, 1.40c.; Tees, 3-inch and larger, 1.45c. Under the Steel Bar Card, Angles, Channels and Tees under 3-inch are 1.40c., base, for Bessemer and 1.45c., base, for Open Hearth, subject to half extras on the Standard Steel Bar Card.

Plates.—It is reported that the American Shipbuilding Company has placed an order for about 2000 tons of Plates for a fourth boat which it will build, making in all nearly 9000 tons of Plates and other shapes placed recently for boats to be built by this concern. General demand for Plates is showing betterment, new tonnage being heavier than for some time, while specifications on contracts are also coming in more freely. We quote: Tank Plate, ¼ inch thick, 6¼ to 24 inches wide, 1.30c., base; over 24 inches wide and up to 100 inches in width, 1.40c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Per pound extra.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges	$0.10
Gauges No. 7 and No. 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum, and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast not included.

Sheets.—A slight improvement in demand for Sheets is reported, but as a rule consumers are buying cautiously, not being disposed to anticipate their wants for any considerable time ahead. Stocks of Sheets in jobbers' and consumers' hands are very light, this being indicated by the character of the orders placed, which are almost invariably for prompt shipment. Prices are quite firm and the report that No. 28 Black Sheets were selling at 2c., Pittsburgh, is strongly denied. We quote No. 26 Black Sheets, box annealed, one pass through cold rolls, at 1.95c.; No. 27, 2c.; No. 28, 2.10c., in carloads and larger lots. Galvanized Sheets are sold at about 80 and 7½ per cent. off, but on very desirable specifications a few mills occasionally name 80 and 10 per cent. off in large lots. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.59c.; Nos. 25 and 26, 2.77c.; No. 27, 2.96c., and No. 28, 3.14c. Jobbers charge the usual advance over these prices on small lots from store.

Iron and Steel Bars.—The price of Iron Bars has been fixed at 1.30c., Pittsburgh, the same price as Steel Bars, and which is equal to 1.25½c., Youngstown. Demand for both Iron and Steel Bars is showing some betterment, and a few season contracts are reported having been placed by agricultural implement makers on which prices have been guaranteed against decline. Buyers are specifying more freely on contracts, and the tonnage in Bars moving out from the mills is larger than for some time. We quote Bessemer Steel Bars at 1.30c., base; Open Hearth Bars at 1.35c., base, with the usual differentials for small lots. We quote Refined Iron Bars at 1.30c., f.o.b. Pittsburgh.

Railroad Spikes.—Demand is rather quiet, and there is some cutting in prices of Railroad Spikes for extreme Western points of shipment. We quote Railroad Spikes at $1.55 per 100 lbs. in carload lots, and $1.60 in less than carload lots, f.o.b. Pittsburgh.

Hoops and Bands.—Tonnage in both Hoops and Bands is improving, local mills reporting that they are entering more orders than for some time. We quote Bands at 1.30c., extras as per Steel card, and Steel Hoops at 1.55c. in carload lots.

Merchant Pipe.—In the past week general demand for Merchant Pipe has been very much better, and a good deal of tonnage has been entered by the mills. The tone of the market is distinctly firmer, and all of the leading mills are fairly well filled with business. A large Pipe line is in the market, this being 110 miles of 3 to 8 inch Line Pipe for the Ontario Pipe Line Company, which proposes to build a gas line to St. Catherines, Ont. The leading mills are bidding on this contract, and it is expected to be placed in a week or ten days. Some large contracts for Line Pipe have been placed in the past two months, and the leading mills are well filled up on the larger sizes of Pipe, ranging from 6 to 12 inches. Prices are being better observed than for some time, and very little cutting is being done. Discounts to consumers in carloads are as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
¼ and ⅜ inch	71	55	69	53
½ and ¾ inch	75	63	73	61
¾ to 6 inches	79	69	77¼	67½
7 to 12 inches	74	59	72½	57
Extra strong, plain ends, ⅛ to ⅜ inch	64	52	62	50
½ to 4 inches	71	59	69	57
4½ to 8 inches	67	55	65	53
Double extra strong, plain ends, ⅛ to 8 inches	60	49	58	47

Boiler Tubes.—We note a slightly better demand for Boiler Tubes, and the tone of the market seems to be slightly firmer. Discounts to consumers in less than carloads, which are now being better observed than for some time, are as follows:

Boiler Tubes.

	Steel.	Iron.
1 to 1½ inches	48	43
1⅞ to 2¼ inches	60	43
2½ inches	62	48
2¾ to 5 inches	68	55
6 to 13 inches	60	43

In carload lots discounts are two points lower than the above.

Merchant Steel.—Some belated contracts from Agricultural Implement makers are now coming in and buying is freer than for some time. Low prices continue to be made on Open Hearth Spring Steel, which, it is reported, has sold recently as low as 1.75c. in special cases and for large orders. Competition among makers of Crucible Tool Steels is also keen and low prices are being made for attractive orders. We quote: Tire Steel, 1.50c.; Sleigh Shoe, flat, 1.40c.; Cutter Shoes, tapered and bent, 1.90c. to 2c.; Open Hearth Spring Steel, 1.85c. to 2c., depending on order. Crucible

Tool Steel ranges from 5½c. to 7c. for ordinary grades and 8c. to 15c. for best grades. Cold Rolled Shafting is firmer at 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered in base territory. Demand for Shafting is quite active, several of the leading mills reporting that they have two to three times as much tonnage on their books as they had two months ago.

Spelter.—The market has been very quiet for three or four weeks as regards sales, but prices are quite strong, the heavy sales of export made some time ago having relieved the pressure of this material on the market to considerable extent. Prime grades of Western Spelter for spot shipment are held at about 5.03½c. to 5.08½c., Pittsburgh, equal to 4.90c. and 4.95c., St. Louis.

Tin Plate.—In the past two weeks quite a little demand sprung up for Tin Plates for spot shipment, but this has quieted down again, and new orders being placed with the mills are very light. Quite a number of the large Tin mills of the leading interest are idle and we also note that a number of the more important independent Tin Plate mills are shut down. It is not believed that over 60 per cent., if that much, of the entire Tin Plate capacity of the country is in operation at the present time. We quote 100-lb. Cokes at $3.25 net, f.o.b. Pittsburgh district, terms 30 days, or 2 per cent. off for cash in 10 days.

Connellsville Coke.—Demand for Furnace Coke continues very active, while Foundry is also improving, and it may be said that the Coke trade is in very satisfactory condition as far as demand goes, but prices do not show any betterment. The demands of the United States Steel Corporation for Coke are very heavy, and the H. C. Frick Coke Company, an identified interest, has 11,000 ovens in the Connellsville region proper, and of these more than 9000 are in operation. Out of 23,330 ovens in the Upper Connellsville region 17,657 were active last week and 5673 idle, the output having been 209,791 tons, compared with 194,761 tons the previous week. In the Lower Connellsville region there are 6083 ovens, of which 4985 were active last week and 1098 idle, the output having been 60,470 tons, as compared with 58,200 tons the week before. Strictly Connellsville Furnace Coke is held at $1.45 to $1.50 a ton, but several of the leading operators are holding their Coke at $1.60 a ton. Strictly Connellsville 72-hour Foundry Coke is held at $1.85 to $2 a ton, some makers refusing to sell at less than the higher price. Main Line Coke made outside the Connellsville region, and which is not regarded as quite as high in quality as genuine Connellsville, is selling at $1.40 a ton and Foundry from $1.60 to $1.75 a ton. All these prices are f.o.b. cars at oven.

Iron and Steel Scrap.—While there is perhaps a little more inquiry for Scrap, very little tonnage is changing hands, consumers holding off buying in the belief that the recent reduction of $3.50 a ton in Billets will force a reduction in prices of Scrap. It is not believed, however, that any material decline in Scrap will occur, as prices have been low for some time and there is not much room for further decline. We quote Heavy Melting Scrap at $11.50 to $12; No. 1 Wrought Scrap, $12.50; Cast Iron Borings, $6.50 to $6.75; Wrought Turnings, $9 to $9.50; Bundled Sheet Scrap, $9 to $9.50; Iron Car Axles, $18; Old Rails, long pieces, $13; short pieces, $11.50 to $12. All above quotations are for gross tons.

Birmingham.

BIRMINGHAM, ALA., September 26, 1904.

There has not been much of a market for Iron so far as actual results are concerned. Some of the interests are in such condition that they are not seeking business and are confining their orders to very restricted limits, while others are practically out of the market. The truth is that the strike which has been prevailing for some weeks occupies the principal attention of the leading operators and the exact conditions are hard to state. The operators claim that they are making progress and are securing more men than they are losing. A prominent official in one of the leading companies states that during the past week its output had been increased at least 50 per cent., and that the prospect for a gradual increase looked good. Labor is being brought into the district every day and efforts are continuous to increase results.

The action of the Tennessee miners in refusing to accept the scale offered there presents a new field for missionary work, and it will be gleaned. The officials of the United Mine Workers claim that the defections from their ranks are very limited and that the mine operators are gaining but a small percentage from their ranks, but the operators give facts and figures to the contrary. Quite a material number of Coke ovens have resumed operations, which is an indication of progress in the process of rehabilitation.

Opinion is divided as to the duration of the present condition of affairs. It is simply a condition of endurance and as to which side controls to the greatest extent the sinews of war. It has been very expensive so far and it looks as if it can last only a short time longer. The miners want to go to work and the operators want to reopen their mines, but overshadowing these desires is the question of the dominance of the Mine Workers' Union or that of the operators of the mines. Neither side presents a solid front to the other, and that makes it so much harder to predict results with certainty.

What business has been done has been on the basis of $9.50 for No. 2 Foundry Iron. There were a few small sales at a slightly increased price, but they were of an insignificant character. There were some sales of Basic Iron at the same price. There were small sales of No. 3 Foundry at $9.25, and No. 4 Foundry sold at $9. There was some very fair business offering for delivery the first quarter of next year, but no one accepted as far as could be learned.

The Belgian Iron Market.

BRUSSELS, September 5, 1904.

The metallurgical industry has quieted down during August. South America and the Levant have given out some pretty large orders for Beams and Heavy Shapes, and there has been some demand from Canada, but Great Britain, India and the Orient have held back and will probably not appear in the market until October. Prices of finished products have, generally speaking, suffered a good deal from the slowing down in business, but so far as the volume of work is concerned the statement may be made that the mills have had no occasion to complain seriously, considering the season.

An important fact to be noted above all, and which has produced a very good impression on the market, is the establishment of a *modus vivendi* between the German Beam makers and the Belgian works at Ougree and La Providence. The agreement extends only over the large Shapes, because there is difficulty in controlling prices on lighter Shapes which are rolled from Blooms. This difficulty is owing to the fact that the market is flooded at this moment with offers of Blooms at very low prices on the part of French works. These Blooms can be purchased by the rolling mills at lower prices than they can be furnished by the Steel works in the country, so that the outside mills can compete with the Steel works on Light Beams. The agreement fixes the price of £4 4s. 6d., f.o.b. Antwerp, per gross ton of 2240 lbs. This understanding possesses great importance because it is the first step in the direction of an international understanding. Work on this has been proceeding for a number of months. Along this line it may be noted that there is an active movement to reach an international pool on Wire Nails. As is well known, an understanding so far as export orders are concerned exists between the works of Belgium, Germany, Austro-Hungary and the United States. So far as America is concerned the understanding is limited to the transactions which take place in the Orient, but since Americans compete very sharply with the other countries in the English home trade, the object of the pool at the present time is to harmonize all the interests. The participation to each of the countries has not been definitely established as yet. It is proposed to give Belgium 12 per cent., Germany 44 per cent., and the United States 44 per cent. This basis will probably have to be revised, because it is more than probable that the United States will not be satisfied with a participation of 44 per cent.

So far as our Pig Iron markets are concerned there has been no material change, and prices have remained the same. Mill Iron is quoted 52 francs, f.o.b. cars Athus, or 57 francs, delivered Charleroi; No. 3 Luxemburg Foundry Iron, 59 francs, and Basic Bessemer, 62 francs.

Steel has again weakened under the influence of French competition. Prices have declined during the past month, and to-day Ingots are obtainable at 86 to 87 francs, Blooms at 90 francs, Billets at 95 francs, and Bars at 100 francs. Muck Bar is holding its own at 90 francs, and good Rolling Mill Scrap is quoted 67.50 francs.

As for finished products, quotations are nominal, since the mills are not anxious to book too much tonnage at the miserable prices which are being offered to them by the middlemen. They close for lots from day to day with the hope that the situation may improve. Merchant Bars are quoted 127.50 to 130 francs for the home market, and £4 16s. for export, with little business in spite of these low figures.

In the Rail trade at a recent letting of special shapes for the State Railroads the Ougree and Cockerill works submitted 157 francs per metric ton, a high price which is only justified by the difficult specifications. For export very much lower prices are made, particularly since Belgium must not alone meet the competition of Germany and England, but also that of America, now delivering Rails at $20 per ton.

Plates and Sheets are rather weak. The construction shops are very well employed on orders for the State and on export business. The Argentine Republic has just distributed to our builders an order for 900 cars. The Belgian State Railways expect to open bids at an early date for an important order for passenger cars.

The Cincinnati Machinery Market.

CINCINNATI, OHIO, September 24, 1904.

A change for the better is reported by the machine tool builders of this city and their nearby contemporaries at Hamilton, Ohio. The month of September has been far ahead of the most sanguine expectations and to date shows a greater volume of business booked than any two months of the current year. This in part may be traceable to outside influences, and in a measure may be somewhat spasmodic in its nature, but it is not so regarded by the major portion of the tool men, who are disposed to believe that the Rubicon has been passed and that from now on we may look for a steady return of trade. It is not claimed that an abnormally large business is being done, but rather that after the very decided lull that has characterized machinery circles for many months, a general revival and quickening is at hand that promises to show a substantial growth.

The war in the Far East has at last made itself felt, and agents of the Japanese Government have been on the scene and have closed several large orders with local manufacturers that have been very acceptable. The great need of these purchasers at the present time is turreted lathes, and manufacturers who were fortunate enough to have a stock of these tools on hand were able to dispose of it without difficulty. In the selection of the tools the matter of price evidently cut but little figure, the only question being how soon can delivery be made. There were also calls for other tools from this same source, which were supplied in this market. As near as can be ascertained the different contracts placed here amounted to about $50,000, with an additional amount aggregating several thousand dollars finding its way into the coffers of the machinery builders at Hamilton.

The strike of the molders has tended to disorganize business and is causing some uneasiness among manufacturers who are in many instances unable to secure the necessary castings to enable them to complete their tools. Apparently this strike is no nearer a settlement than it was when it started, and predictions are made that it will eventually result in the "open shop" being declared by all the foundries in the city. The strikers apparently took a very inopportune time to enforce their demands, as at the time of the inauguration of the strike most of the jobbing foundries were running but three and four days per week, and were experiencing but little hardship at the enforced idleness of their plants. One or two cases of violence have been reported as a result of the picketing system, but police protection is promised, and it is hoped no more serious trouble will ensue.

It is reported that the railroads are once more becoming important factors in the purchase of machinery. This activity is not, however, so much from the standpoint of expansion and enlargement of their shops as that the time has come when these purchases are an absolute necessity to the continuance of their various repair shops. A canvas of the different shops leads us to believe that with few exceptions they are gradually augmenting their force, and that at the present time more men are employed in this line than has prevailed at any time during the last eight or ten months.

William Lodge, president of the National Machine Tool Builders' Association, states that the date and place of holding the next meeting of this organization has not as yet been determined. In the event of the meeting being called for an early date it is probable that it will be held in St. Louis, but, if later in the year, New York will no doubt be selected.

In all probability the largest order for planers ever placed with one concern was that recently received by the G. A. Gray Company, calling for ten of its large tools, 84 x 56 inches, the purchaser being the Illinois Central Railroad Company. In value the contract aggregated about $25,000. These machines were secured for use in the company's shops at Clinton, Iowa; Vicksburg, Miss.; Mattoon, Ill., and the Burnside shops at Chicago, Ill. In addition to the above the Gray Company booked an order for eight planers, 84 x 72 inches, amounting to about $20,000 in value, from the Mason Machine Works at Taunton, Mass. This concern manufactures the Campbell printing press and has a large plant. Last week the Gray Company installed a 54 x 26 inch machine in the Goos printing establishment in Chicago, which makes the third for this concern during the last month.

Shop No. 2 of the Bullock Electric Company is progressing rapidly, the building being practically under roof. The company has purchased a portion of the tools, as stated in last month's letter. This list at present is incomplete and several additions are to be made thereto.

Interesting developments are transpiring at Hamilton in connection with the Niles Tool Works Company plant of the Niles-Bement-Pond Company. Several months since it was decided to enlarge this plant, but the company was unable to make the desired changes owing to the plant being hemmed in by a street in the rear of the present buildings. The company owns valuable property on the opposite side of this street and concluded that if it could secure the intervening space it would be in a position to follow out the plans for enlargement. To this end a request was made of the City Council, asking that a portion of this street be vacated to permit the erection of the new buildings planned. At the same time it was the intention to change the old buildings in such manner as to make them up to date in every particular, the old structures being not high enough to allow the installation of the latest and most approved tools. The Council, after a series of meetings, refused the plea, claiming that such a move on its part would work a hardship on the abutting property owners. The company then decided to appeal to the courts, but without success, as the Court of Appeals refused to grant its favor. About this time numerous cities sent letters inviting the Niles Company to change its location. They offered in the way of inducements to present the company with all the ground required as well as the necessary building material, at the same time agreeing to transport the old plant to its new quarters free of cost to its owners. The possibility of losing from their midst the largest plant in the city, and one that has been a very important factor in its growth, alarmed the citizens, and they forthwith appointed a committee to confer with the Council and see if something could not be done toward a settlement of the controversy. At this writing nothing definite can be stated as to whether or not the plant will be moved if the verdict goes against them. It is reasonably safe to predict, however, that some compromise will be effected that will be satisfactory to both parties.

The Black-Clawson Company, manufacturer of paper mill machinery at Hamilton, is at the expense of a large amount of money, completely remodeling and enlarging its plant. The old foundry building has been torn down, and on the site a new up to date structure, 55 x 260 feet, has been erected. This does not include the chipping and sand sheds, which would add about 80 feet to the above dimensions. The company is also adding to its erecting shop, which, when completed, will be 50 x 300 feet. The machine shop is 100 x 300 feet and will not be enlarged. A new power plant building, 85 x 40 feet, has just been completed, in which has been installed 300 horse-power of water tube boilers and a 200-kw. Bullock direct current generator and a heavy duty Corliss engine, as well as the necessary feed and well pumps. It is contemplated in the near future to have all the machines motor driven, and work is now being completed on plans for the rearrangement of the tools. A new office building has been erected which is a model in its way, being about 50 x 50 feet, elegantly finished in oak. Trade is reported as good, with orders ahead to run the plant for four months. Last month the company made a shipment of a complete outfit consisting of 13 carloads. In the next 60 days it will forward to the Lee Paper Company, Vicksburg, Mich., two complete paper machines, which will require 35 cars for transportation. A shipment of 20 carloads will be ready for Middletown, Ohio, in a few months. The company does not confine its operations to this country, but finds a ready market for its machines in foreign lands. A complete outfit has just been forwarded to Australia.

The new home of the Oesterlein Machine Tool Company is rapidly assuming shape, the foundation being about ready for the superstructure. It is intended for the present at least to use the tools employed at the present plant and add little to this equipment.

The Bradford Machine Tool Company reports trade to be in much better condition than at any time since the first of the year. Particularly is this true of September, which so far is far in excess of any month preceding it. The company is in receipt of several nice orders which will require the addition of new men to permit making delivery in the required time. These will be put on next week.

The Lodge & Shipley Machine Tool Company has been running full time, and for a while was compelled to work at night, to fill the orders that had recently been booked. This condition was but temporary and has since passed. The company is well pleased with the general outlook and anticipates a steady growth of demand.

The firm of Schumacher & Boye owing to press of outside orders has been exceedingly busy, so much so, in fact, as to compel its working extra hours daily. This may be in a measure spasmodic, but the firm thinks the trend of affairs is upward, and better times may be looked for.

The Cincinnati Planer Company is doing a nice business. It is now engaged in filling orders recently received from Canada and Havana. The company also reports quite an activity in the line of purchases by several of the railroads, which is considered a good indication of improvement.

The Sebastian Lathe Company during the recent lack of business pressure has been in such condition that it has never been deemed expedient to reduce its working force, nor even work on short hours.

The I. & E. Greenwald Company is hampered somewhat in its production on account of the striking molders. The company is, however, able to run two or three small heats

each week with the help of a foreman and several apprentices.

The R. K. Le Blond Machine Tool Company reports without hesitation that business is much better during the past two months than at any time since last year. September to date is reported as being twice as large in volume of business as was the same month in 1903. This concern has also experienced quite an increase in foreign demand during the last few months.

The Houston, Stanwood & Gamble Company has purchased the Western Foundry, which is located immediately across the street from its plant—a structure of about 300 x 150 feet. The company is adding to the equipment of this latest acquisition and is operating the plant, making a specialty of castings incident to its line. So far the company has escaped trouble with its molders and does not expect any, as the plant is practically an open shop. In the near future it is intended to make further improvements in the foundry. The company has lately received an order for a complete outfit, consisting of a 75 horse-power engine and boiler for the Riley-Cole Milling Company, Newbern, Tenn. Other recent orders include: A carload of engines and boilers for the Pittsburgh Foundry & Machine Company, Pittsburgh, Texas; a 100 horse-power engine and 125 horse-power boiler for the E. E. Edge Lumber Company, Taylorville, Fla.; a 250 horse-power engine for Pillsbury-Watkins Company, Deer River, Minn.; a 70 horse-power engine for Hattiesburg, Miss.; a pair of engines aggregating about 500 horse-power to be used as relay for an electric light plant in Wisconsin. These latter engines are to take the place of a water wheel now being used in the plant, in the event of a breakdown. The company has also recently furnished five engines, ranging from 200 to 350 horse-power each, to a New York firm, for export trade to Cuba and Porto Rico.

The J. A. Fay & Egan Company's plant at John and Front streets was seriously damaged by fire on Friday night. It started in the planer room and the contents, which consisted mostly of stored tools, were very badly damaged, mostly by water. These tools will all have to be gone over and burnished. The loss is estimated to be in the neighborhood of $200,000. Clifford Egan has just returned from the Hawaiian Islands, where he went to investigate the sugar industry in the interest of the company. He reports wonderful development along this line, and the outlook for trade with these islands as very promising.

The Hooven, Owens & Rentschler Company of Hamilton states that business is not regarded so favorably as it was a month ago. The new pattern steam turbine placed on exhibition at the St. Louis Exposition by this company is attracting much attention. The company has just completed the installation of three of its new style vertical engines in the Consumers' Electric Light plant at New Orleans. Two of these engines are 2500 horse-power and the other 1000 horse-power.

The Hamilton Machine Tool Company is not so busy as it was several months ago. August was to this concern a better month than September, and in that period a decided gain was experienced. The company has been shipping several large lathes and radial drills to Mexico and the Philippines, the latter being against a Government contract.

The New York Machinery Market.

NEW YORK, September 28, 1904.

Owing to the success which has attended the Southern Supply and Machinery Dealers' Association efforts are now being made to organize along similar lines supply and machinery dealers located in other sections of the country. The movement is still in its infancy, and as the first general meeting of the parties interested has not yet been held, the exact basis of organization has not been determined as yet. C. B. Carter, Box 616, Knoxville, Tenn., who is the secretary-treasurer of the Southern Association, is at the head of the new movement. Mr. Carter announces that a meeting, to which supply and machinery dealers from all sections of the country are invited, will be held some time next month. The plan of organization which Mr. Carter has in mind can be best apprehended from a letter which he is sending to the trade. It is, in part, as follows:

"I am anxious to secure the names of all the supply and machinery dealers located in all sections of the United States outside of the South. (We already have the Southern dealers well organized.) My purpose in securing these names is to interest them in association work. I am preparing to organize an Eastern Supply and Machinery Dealers' Association embracing the States east of New York State; a Northern Association, embracing New York, Pennsylvania, New Jersey and Delaware; a Central Association, embracing Ohio, Indiana, Illinois and Michigan; a Missouri Valley Association, embracing points north of Missouri and Indian Territory, between the Mississippi and Rocky Mountains, including Wisconsin, and a Pacific Coast Association, embracing the Pacific Coast territory. Each association will have its own officers and will be an independent organization. Local and sectional matters can be handled in a very satisfactory manner, and in affairs affecting the interests of supply and machinery dealers throughout the entire United States each association will co-operate with the other. I think it desirable to organize the supply dealers in this manner, for the reason that each section is surrounded by different conditions, and it would therefore be very difficult for a national association as an organization to accomplish the results which may reasonably be expected through the combined influence of well organized sectional organizations. The expense to the membership will be less than it would be otherwise. On important questions affecting the interests of all sections representatives from each association can confer together, and more good will result in this way than in large conventions where individual members may be represented. The representative of each sectional association, by being in close contact with its membership, can always vote intelligently, and any plans which may be mutually agreed upon will be very likely carried out."

Mr. Carter has just issued a pamphlet containing extracts from a number of letters received in response to the above communication, which show that many important supply and machinery houses are taking a lively interest in the movement. They state that conditions call for organization and offer their co-operation. It is suggested by some of the dealers that three associations would probably cover the United States, as follows: The Southern, covering the Southern States, including Texas, Louisiana, Arkansas and Missouri; a Northern, covering the territory north of the Mason and Dixon line and east of the Mississippi, and a Western Association, embracing the Western States.

A report which has excited considerable interest has been current in the street during the last few weeks. It purported that the Ferrocute Machine Company, Bridgeton, N. J., had been absorbed by the Niles-Bement-Pond Company. The report is officially denied. Oberlin Smith, the president and mechanical engineer of the Ferrocute Company, informs us that the company has never had the faintest idea of selling its new plant.

Machinery merchants are now looking for specifications for equipment to be installed in the Newark, N. J., branch of the Westinghouse Electric & Mfg. Company. When these are forthcoming they will doubtless be of a very substantial character, as the Westinghouse Company is quietly proceeding with extensions which are of considerable magnitude. Four new buildings are now in course of construction, which, according to the records of the Building Department of Newark, will cost $100,000. Westinghouse, Church, Kerr & Co. are acting as supervising and consulting engineers. There are to be two buildings, 55 feet in width and 200 and 210 feet long, respectively, and two of 60 feet width and 140 and 170 feet in length, respectively. They will all be 60 feet high, having four stories and basement. They are being constructed of brick and reinforced concrete. It is reported that the company has set aside $400,000 to cover the entire cost of the improvements. The present works at Newark are employed in the production of electrical instruments and Nernst lamps. We are informed that the extensions are for the enlargement of these departments. There is a report current, in fact, to the effect that the entire instrument and lamp manufacture of the company is eventually to be centralized at this point. This move, it is said, has been necessitated by the unfavorable labor conditions so far as skilled mechanics are concerned in the Pittsburgh section. As the Newark plant has grown, skilled mechanics accustomed to the fine work required in electrical instrument manufacture have been brought from the Pittsburgh plants. It is said that it has been difficult to hold this class of men in the Pittsburgh region, as they prefer to work in the East, where there is a much greater number of plants of this character.

Some time ago reference was made to the extensive plant to be erected by the Standard Roller Bearing Company of Philadelphia. While the entire list of machinery to be installed in this plant has not been completed, a few items have been definitely decided upon which will bear out our orginal statement that a large amount of machinery will be purchased. The items which it has been settled upon to purchase are as follows: 35 automatic screw machines, 10 semiautomatic or hand screw machines, 20 drill presses, 15 lathes ranging from 14 to 30 inches swing, 15 Universal grinding machines, three milling machines, one 350 horse-power engine. S. S. Eveland, manager, is in charge of the purchases. The company has a capital of $2,000,000 and counts among its directors several influential financiers. The office and works are located at Forty-eighth street and Girard avenue.

Nothing of unusual importance has developed in connection with any of the large pending machine tool purchases. Parties in the trade who have been following the Lehigh Valley Railroad proposition report that the matter has arrived at a point where the fortunate bidders may be selected any moment. The Singer Mfg. Company has been buying a few machine tools and have inquiries out for many more. The International Steam Pump Company is moving to its new plant at Harrison, N. J., and has been in the

market for quite a few machine tools and specialties. The General Electric Company has been in the market, but no large purchases are being made, owing to the absence of Mr. Riddel.

The fire at the Bethlehem Steel Works last Saturday night, while not doing as great damage as originally reported, may give impetus to the plans of Mr. Schwab to improve this plant. Telegraphic advices to-day from San Francisco announce that Mr. Schwab gave out a statement to the effect that the plant of the Union Iron Works would be enlarged and made the finest shipbuilding plant in the United States, if not in the world, as soon as the reorganization matters are completed. The real and personal property of this plant was sold to the reorganization interests of the United States Shipbuilding Corporation for $1,700,000 last Monday. This leaves only the Harlan & Hollingsworth plant, at Wilmington, Del., to be disposed of before the plans for reorganizing the physical properties can proceed.

The Buffalo & Susquehanna Railroad Company, 960 Ellicott square, Buffalo, N. Y., will build a new machine, boiler and blacksmith shop at Galeton, Pa. The main building is to be 175 feet long by 65 feet wide. The contract for the structure was awarded to the McClintic-Marshall Construction Company, but contracts for equipment have not been placed as yet. C. W. Goodyear, second vice-president and general manager, is in charge of the work.

The plant of the Sturgess Governor Engineering Company, manufacturer of water wheel governors, variable rope transmissions and high speed air pumps, Watervliet, N. Y., has commenced making extensions to its plant, which eventually will be of large proportions. The machinery needed at present will be in the line of lathes, boring mills, planers, etc. No addition to the power plant will be made, as the company uses the electric street current. Lance G. Finlay, assistant manager, is in charge of the new extensions.

A large tract of land adjoining the plant of the Goulds Mfg. Company of Seneca Falls, N. Y., has been purchased by the company. It is intended to increase the size of the plant very materially in the near future, but details cannot be had as yet, as the plans and specifications for the additional buildings are not completed. The new buildings will, however, be used for the manufacture of pumps and hydraulic machinery.

In view of the ambition of machinery builders to place their products in the engineering departments of educational institutions considerable interest is being taken by the trade in the extensions now being made to the Syracuse University of Syracuse, N. Y. L. C. Smith of the firm of L. C. Smith & Bro., typewriter manufacturers of Syracuse, has given to the University another building for laboratory purposes, the erection of which was begun last Monday. It will be 54 feet wide by 200 feet long, and will have three floors. The first floor will be for hydraulic apparatus, mining machinery, &c. The second floor will be devoted to metal working machinery and accessories, and the third to wood working machines. The present building, which is the first erected by Mr. Smith, will be devoted entirely to theoretical work. It is the intention of Mr. Smith to add other buildings as soon as conditions require and gradually form a group of buildings to be known as the Lyman Cornelius Smith College of Applied Science. An idea of the demand in Central New York State for engineering tuition can be found from the fact that the present building was erected only three years ago, and there are now enrolled in the college about 350 students. James R. Day is chancellor of the University, and William Kent, who is very prominent in engineering circles, is dean of the College of Applied Science.

Some time ago we referred to the plans of the Public Service Corporation of New Jersey, which controls practically all of the electric and gas interests of that State, to build a great central electric power station on the Hackensack Meadows, near Jersey City, N. J. The work is now proceeding and contracts for one-quarter of the equipment are being placed. It is intended eventually to make this one of the largest, if not the largest central station in the country. The present plans call for eight sections of about 5000 boiler horse-power each. Contracts have been placed for the bulk of the equipment for two sections. These include two Curtiss turbo generators of 5000 kw. and two of 3000 kw., and two batteries of Babcock & Wilcox water tube boilers, each containing five boilers of about 1000 maximum horse-power each. The boilers will be equipped with superheaters. Wheeler surface condensers containing Edwards air pumps and centrifugal circulating pumps have been secured, as well as a 50-ton Shaw electric traveling crane and nine Alphonse-Custodis brick stacks to be 225 feet high and 14 feet in diameter at the top. A contract has also been awarded the Robins Conveying Belt Company for the entire coal and ashes handling machinery. Feed water heaters and other accessories still remain to be purchased. The plant, which is being constructed according to the designs and under the direction of W. W. McKee, will be so arranged that it can be operated as one unit or so that each of the eight sections may be operated separately. The plan of the company is to eventually make this the sole generating station for the upper half of New Jersey. High tension lines paralleling the company's Newark and New York trolley routes are now being erected. While the entire plant is not expected to be in operation much inside of eight years, the section now under construction is intended to be completed within a year from next July, when the New York & New Jersey Terminal Company's tunnel under the Hudson River is completed. The Public Service Corporation has the contract for furnishing the power for operating the cars in this tunnel, which will compose the first subaqueous system under the Hudson River.

In our last issue reference was made to the specifications for water works pumping and power generating machinery to be purchased November 9 by the Sewerage and Water Board of New Orleans, La. A copy of the detailed specification has since come to hand, showing that in addition to the apparatus named last week a considerable quantity of accessories will be required. There are to be three electric traveling cranes to be used in erecting and attending the pumping engines. Two of them are for operating over the four 20,000,000-gallon pumping engines, and one is for the 40,000,000 and 20,000,000 gallon centrifugal pumps and their power units. Each crane is to be of sufficient power to easily handle the largest casting to be placed in either wing of the building. The specifications for the largest pumping engines require that no single piece shall weigh more than 30 tons. Each of the four high lift pumping engines will be provided with a surface condenser. There are to be four boiler feed pumps and an equal number of air pumps connected to the four high lifting pumping engines, all to be driven by the main engines. One additional independent air compressor will be provided for charging air chambers. The four low lift pumping engines and the two power engines are to exhaust to two surface condensers. An electrically or hydraulically operated centrifugal pump will be required to raise the feed water from artesian wells to an elevated steel tank. Two auxiliary boiler feed pumps will also be required, each to be of sufficient capacity to supply water for three 400 horse-power boilers. An economizer is specified for the boiler plant. Superheaters of the attached type are to be connected to all boilers. As might be expected in a plant of such magnitude, the piping system, valves and steam specialties will be on an elaborate scale. The office of the New Orleans Sewerage and Water Board is located at 602 Carondelet street.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until October 11 for a quantity of supplies for the New York Navy Yard, including motors, generating sets, lathe chucks, jointing machine, band saw, knife grinder, boring machine, scroll saw, gap lathe, Sturtevant pressure blower, sprue cutter, emery grinders, Hanner pneumatic screen shaker, pneumatic hammers, air compressor, boiler tube expanders, hand test pumps, gear hoists, pneumatic hoists, Watson & Stillman hydraulic forcing machine, Dunlap piston air drills, stencil cutting machine, steam engines for gypsies, Rockwell rotary melting furnaces, Morison suspension furnaces, Ward boilers, duplex steam pumps and Blake duplex steam pumps.

Bids will be opened October 11 at the Bureau of Supplies and Accounts, Navy Department, Washington, for supplies for the Norfolk, Port Royal and Charleston navy yards, including motor drive outfit for Long & Allstatter horizontal punch, Davidson steam pumps, Blake duplex pumps, Ward steam generators and tubular boiler.

Bids for the construction of boat overhangs and a locomotive train at the Naval Academy, Annapolis, were opened September 21, as follows:

Item 1, crane; 2, boat overhangs.

Browning Engineering Company, Cleveland, Ohio, item 1, $9750.

Dodge Coal Storage Company, Nangateck, Conn., item 1, $11,475.

Cleveland Crane & Car Company, Wickliffe, Ohio, item 1, $7500.

Industrial Works, Bay City, Mich., item 1, $8990.

North Penn Iron Company, Philadelphia, Pa., item 1, $5890; 2, $13,698 with corrugated iron roof, and $23,990 with copper roof.

Snare & Triest, New York, item 1, $8825; 2, $18,950; items 1 and 2 combined, $27,750; if copper roof is required add $8250.

The International Harvester Company Adopts a Ten-Hour Day.—The International Harvester Company has resumed operations in its McCormick and Deering plants in Chicago and its Plano plant at West Pullman, Ill., which were closed September 10, notices being posted that men will be required to work on the ten-hour basis. Last January, after a strike in the Deering plant, the company made agreements with union officials, granting among other concessions a nine-hour day at ten-hours' pay. This agreement ran until September 15, and the Saturday previous to that date the company closed its plants and

refused to make any further agreement or in any other way recognize the authority of the Federation of Labor or other union bodies. The men will work on an average of 57⅝ hours per week the year through, the schedule calling for ten hours the first five days of the week the year through and Saturday closing at 12 o'clock noon during the summer months and at 4 p.m. the remaining nine months. Under the old agreement the men received 60 hours' pay for 54 hours' work, and under the new agreement they will receive the same rate per hour for the actual hours employed. It will be seen by this that only a very slight reduction in wages is made, but that the men will have to work between two and three hours a week longer than they did under the old arrangement. About 9000 men are immediately affected, but during the busy season over 15,000 are employed in these three plants.

The Crucible Steel Company of America.

Following are extracts from a statement to stockholders, issued September 20, by Chairman Wm. G. Park:

Soon after the organization of the Crucible Steel Company of America its management believed that it was necessary to have a larger supply of open hearth steel than the constituent companies were able to produce. Acting upon this belief the St. Clair Steel Company was organized December 3, 1900, and a large open hearth plant was begun. To build the plant and provide working capital, bonds to the amount of $2,250,000 were issued. Later on it was thought advisable to build blast furnaces to secure a supply of pig iron for the steel works. The St. Clair Furnace Company was, therefore, organized April 24, 1901, and to build these furnaces bonds to the amount of $3,000,000 were issued. It was afterward found that the amount of money arranged for was insufficient and that additional funds would be necessary. To obtain this money the St. Clair Steel Company and the St. Clair Furnace Company were consolidated under the name of the Clairton Steel Company, June 9, 1902, under which a further issue of $5,000,000 in bonds was made. The payment of all these bonds was guaranteed by your company.

Through the purchase of iron mines, coal lands and other properties, extensions to the plant and delays in construction, which prevented its being operated during a very prosperous period, together with other losses incident to the early operation of the works, this amount was entirely expended, and it became necessary for your company to advance large sums of money to pay the debts of the Clairton Company, complete the plant and keep it in operation. This money was largely obtained by discounting short-time notes of your company, indorsed by the Clairton Company, which notes at maturity were provided for October 21, 1903, by an issue of $5,000,000 collateral trust bonds of your company, of which $1,600,000 were sold at par, $2,900,000 used as collateral, and $500,000 remain in the treasury.

At this date the undersigned was invited by the management to assume control of your company as chairman of its Executive Committee, and at once entered upon the discharge of his duties.

At that time the Clairton Company was not only losing money, but to meet its pressing engagements, growing out of the construction and operation of the plant, was demanding almost daily large sums which your company was unwilling to furnish, and at the same time large amounts of Clairton bonds were approaching maturity. In view of these conditions it was deemed best by the management to apply for a receiver for that company. A bill in equity was accordingly filed by your company January 4, 1904, asking for the appointment of a receiver for the Clairton Steel Company, whereupon the court appointed the Union Trust Company of Pittsburgh and Wm. G. Park, receivers.

A thorough investigation of the affairs of the Clairton Company was then made, and, according to reliable estimates, it was found that after utilizing all the abovementioned bonds a further sum of $3,000,000 to $5,000,000 would be required for working capital and to successfully conduct the business as the plant then existed. Even this large sum would probably not have been sufficient to meet the requirements of the immediate future, because, owing to the restricted market for billets, it would have been necessary to erect a large number of finishing mills to carry the product to a more advanced state of manufacture. Furthermore, the character of the orders of your company for blooms and billets is so varied that it was found difficult to operate the Clairton works profitably on the orders of your company alone, thus making it necessary to largely dispose of its product in the open market.

Therefore, after careful consideration, it was thought best under the circumstances to dispose of the plant rather than place your company under further responsibility and possibly jeopardize its very existence by attempting to retain and carry on the Clairton business.

An opportunity presented itself and a sale was made, with the unanimous approval of your Board of Directors, to the United States Steel Corporation, upon the following terms:

1. The United States Steel Corporation to guarantee the payment of the principal and interest of the $10,250,000 of the Clairton bonds, and to assume mortgages on real estate, coal lands and mining properties to the amount of $1,666,715.31.
2. To assume all contracts for ore.
3. Pay $1,000,000, par value, of 5 per cent. United States Steel second mortgage sinking fund gold bonds.
4. To make a ten-year contract with your company for its requirements of Bessemer, basic and low phosphorus pig iron, and standard Bessemer and open hearth billets, &c.

The following statement shows the total investment in the Clairton enterprises, the sum realized from the sale and the loss sustained by your company:

Total investment, covering 149 acres of land, steel and furnace plants—12 50-ton open hearth furnaces and blooming mill, three blast furnaces, with equipments—2907 acres of coal lands, three large ore properties, 140 houses, 166 lots, inventories, interests and discount on bonds, &c..		$16,696,369.46
Loss prior to sale:		
(a) Premium on bonds, interest, &c.	$1,461,346.53	
(b) In operation, depreciation in inventory, royalties, taxes, &c..	973,454.20	2,434,800.73
		$14,261,568.73
Amount realized from sale to United States Steel Corporation:		
United States Steel Corporation:		
(a) Guarantees payment of principal and interest of Clairton bonds	$10,250,000.00	
(b) Assumes mortgages on real estate, coal lands and mining properties	1,666,715.31	
(c) Delivers $1,000,000, par value, of the ten-sixty year 5 per cent. sinking fund gold coupon bonds	766,236.25	
Total		$12,682,951.56
Loss on sale to United States Steel Corporation..		$1,578,617.17

Your company has never carried on its books as an asset the $3,500,000 capital stock of the Clairton Company.

Through the sale to the United States Steel Corporation the supply of raw material which the Clairton Company was intended to provide has been secured for a period of 10 years by a contract with the Carnegie Steel Company upon terms very favorable to your company. This contract was an important consideration in the sale of the property, and, while it is not appraised as an asset, it is, nevertheless, a substantial offset against the loss, and in value may exceed it.

The effect of the losses incurred in the Clairton enterprise was to increase the floating indebtedness of your company. This debt was temporarily provided for by the issue by your company of $5,000,000 of short-time collateral trust bonds, heretofore referred to. This floating debt, including the bonds sold, bears interest at the rate of 6 per cent., and the bonds mature in three and five years from the date of their issue. It is deemed advisable to fund this debt by an issue of bonds of $6,000,000 to $7,000,000, bearing interest at a rate not exceeding 5 per cent., to be secured by a first mortgage upon all the property of your company. The bonds to be issued in series, one of which shall mature (after five years)

annually during 20 years. At the annual meeting to be held October 19, 1904, the management will ask the stockholders to authorize the issue of these bonds by your Board of Directors at such time as it may deem expedient.

The carrying out of this plan, postponing the payment of the present indebtedness for a long period of years, will enable your company to distribute its surplus earnings among its stockholders at a much earlier date than if the present collateral trust bonds are paid as they mature or the indebtedness be carried along until extinguished in the form of temporary loans.

Notwithstanding the losses to which the Clairton enterprise has subjected your company it is in good financial condition. The additions and improvements made to your plants will offset in value those which were sold or abandoned, and out of the quick assets of your company all its debts, including the $5,000,000 collateral trust bonds, could be paid, leaving a large balance and all your plants free from incumbrances.

The Mining Engineers.

HOUGHTON, MICH., September 24, 1904.—The final three days of the Duluth session of the American Institute of Mining Engineers were spent in the copper country of Northern Michigan and at Ishpeming iron mines. The party arrived at Houghton on Monday morning on two special trains from Duluth, pulled over the Duluth, South Shore & Atlantic Road by the courtesy of that company. A programme of entertainment, including nothing but visits to mines, smelters, &c., had been arranged in accordance with the request of the Institute. This was under charge of a Committee of Arrangements headed by W. E. Parnall, manager of the Tamarack-Osceola interests; W. D. Calverley; Jas. McNaughton, superintendent of the Calumet & Hecla; F. McM. Stanton, superintendent of the Stanton mines, and Fred Smith, superintendent of the Mohawk and Wolverine. These were assisted by a large general Reception Committee, the members of which were on hand as guides, paymasters and friends.

Special trains took the party to the Dollar Bay works of the Tamarack-Osceola Mfg. Company, where the process of rolling copper sheets and wire bars and drawing copper was inspected. This is the only works of the kind in the Northwest. Here the mineral of mines of its owners is smelted, and about 150,000 pounds of copper is turned out daily and much of it manufactured. From this works the stamp mills of the same companies on Torch Lake were visited. Here, in the new Osceola mill, the latest thing in a stamp was examined. It is a steeple compound, built over from the Nordberg single cylinder stamps that had previously been in use at this mill. These had crushed 540 tons of rock each per 24 hours. The compounded stamp has a record of 725 tons in 24 hours for a continuous week, is treating more than 700 tons per day steadily, and is showing a saving of steam of about 30 per cent. per ton treated. Osceola has three mills, the first containing four heads, not now operated, capable of about 300 tons each per 24 hours; the second has three stamps of 24-inch stroke, striking 100 blows per minute under 95 pounds steam pressure, and capable of a duty of more than 500 tons of rock daily; the third is a new steel mill, equipped with four Nordberg heads of the four-valve type, having 20 x 24 inch cylinders, circular mortars, with ⅝-inch screens and hydraulic separators, and has one set of regrinding rolls as an experiment, taking the oversize from the stamps. Three of these heads are simple, and one, as mentioned, is compounded. The rock treated is of such a character, and its treatment is such, that 20 per cent. of the copper secured comes prior to any secondary treatment. This mill has for secondary treatment 110 Hodge jigs, 24 round tables and four Wilfley tables. This is one of the best mills on Lake Superior, and Osceola is second only to Calumet & Hecla in the amount of rock treated. The Tamarack mills adjoin those of Osceola, but were not visited.

At the Calumet smelting works the visitors saw a process of treatment of copper metal very different from that at Osceola. Calumet adheres to hand pouring from the furnaces, thus exposing to oxidation a lesser quantity of molten metal during the pour. These smelters receive mineral running about 70 per cent. copper. The works cover nearly 30 acres of ground. Calumet & Hecla mills are near the smelters, and contain 28 heads of stamps, capable of an average duty of 500 tons per day. These mills are now treating 6000 tons of rock each day, and two sections are being rebuilt of steel construction. When completed they will crush about 10,000 tons daily. In one of the stamp houses each head is run by a separate motor. Electric power for the mills is obtained from two engines, one an old hoist remodeled and the other a new Allis twin vertical tandem compound expansion engine, direct connected with cylinders 17 x 40 x 48 inches, and running at 95 revolutions a minute. Each is connected to a 1000-kw. General Electric alternating current generator. The vast accumulation of sand from these mills, amounting to the present time to more than 30,000,000 tons of tailings, and increasing at the rate of 6000 tons a day, has made it necessary that sand shall be elevated from the mills and discharged from a considerable hight. For this work a sand wheel of 64 feet diameter has been installed, taking up the sludge and dumping it into launders whose basins are beneath the periphery of the wheel at its uppermost point. A vast amount of water is required for the stamps and for handling the sands. The pumping engine Michigan, designed by Consulting Engineer E. D. Leavitt, has capacity for 30,000,000 gallons per day, and there are four additional pumps, which increase the total capacity at this works to 130,000,000 gallons. At the mine the surface equipment at several shafts was examined, including the 7400 horse-power engine at No. 4, which operates four Nordberg compressors with a combined capacity for 500 drills. The 8000 horse-power hoist at Red Jacket shaft was seen. Calumet & Hecla has not less than 70,000 horse-power about the works, including hoisting engines, compressors, generators and pumps.

A number of the visitors went underground at Tamarack, and others at Wolverine. The latter is mining in a rock that stands almost without timbering, and is winning about 30 pounds refined copper per ton of rock treated. The mine is opened on a lode pitching about 40 degrees and from 15 to 18 feet wide. For a hight of four or five levels—levels being 100 feet apart on the pitch of the lode—and for a length along the strike of many hundred feet the lode is entirely mined out, except for floors of levels, perhaps 6 feet thick, and frequently holed through, and an occasional pillar, 25 to 30 feet thick, left in only where the rock seems rather too poor to mine out this work indicating the remarkable holding power of the hanging walls. At Tamarack No. 5 shaft is one of the finest hoisting plants in the world. It consists of a 6500 horse-power Nordberg engine with four high pressure cylinders, each 36 by 72 inches. This operates a double cone drum, the ends being 16 feet and the center 24 feet in diameter. This runs two skips moving in balance, and each half of the drum carries 6500 feet of 1½-inch steel cable. The load is 24,000 pounds, half rock and the rest skip and rope, and is hoisted at the rate of 3000 feet per minute. A duplicate hoist has just been installed, the two costing about $150,000. There is a combination shaft and rock house at this point, the two on diverse foundations, and being separately framed and erected, but apparently one building. This is in order that the stresses due to hoisting in the one frame and to rock breaking in the other shall not interfere. These two interleaved buildings are of steel and are 131 feet high. No. 5 is the deepest vertical shaft in the world, of an extreme depth of 4938 feet. It was sunk in six years, and the conglomerate was cut within 12 feet of the depth and within 11 days of the date prophesied when work commenced by the then manager of the company, W. E. Parnall.

Tuesday South Range mines, including Baltic, Champion and Atlantic, the Atlantic-Baltic dam and Baltic mill were visited. Except Atlantic, these mines are new. Baltic is making about 1,000,000 pounds of copper a month and is still growing. It is mining on the lowest amygdaloid bed in the region, an exceptionally strong lode, ranging from 15 to 60 feet in width. A system of

dry walling with waste rock is employed underground because of this width and also because of the persistence of copper in the rock, which requires that nearly all lode material be mined out. The mine is developed to about 1000 feet, but its machinery plant is intended for a much greater depth. The Baltic dam obviates the need of pumping water for its mill, which at other mines in the region costs about 2 cents per ton of rock treated. This dam is unique in that it is of steel frames and plates, anchored in a concrete base, held by its own weight. It impounds 1,250,000,000 gallons of water, and supplies both Baltic and Atlantic mills. Aside from 550 feet length of wings the main dam is 475 feet long, and the central one of its five sections is 74 feet high. This central section has a concrete base 62 feet wide, measuring up the river, built up from rock excavations. The resultant of all pressures on each unit of 8 feet width and the hight of the dam gives 2,626,000 pounds against the unit, or about 300 pounds per square inch. The upper 50 feet of the dam is inclined down stream 45 degrees, throwing the point of overturn within the central third of the concrete base. The dam is made of 3-16 to ⅜ inch boiler plates, supported by a truss of I-beams and inclined columns and struts.

At Painesdale Champion mine, a new property of the Copper Range and St. Mary's companies, was visited. It is producing nearly 1,200,000 pounds monthly, and has an excellent plant of heavy machinery adapted to its special needs. Development was begun here early in 1899, and since then 6½ miles of underground openings have been made, which are increasing at the rate of 7000 feet a year. There are four shafts, averaging a little better than 1000 feet deep. The mine carries as high a tenor of copper as any in the region, aside from Calumet & Hecla, or about 1.75 per cent.. It is excellently managed by Dr. L. L. Hubbard, ex-State geologist.

On their way back from Painesdale the visitors stopped at Atlantic mine. This mine is notable for its low grade of rock and for the fact that it is making money on an amygdaloid running from 0.66 to 0.75 per cent., or 12 to 15 pounds, of refined copper to the ton of rock treated. Its lode is very wide, exceptionally evenly mineralized, and so soft that less explosives are required and a stamp will do more work than elsewhere. It is probably the best example extant of a low grade mine. But the visitors were presented with specimens running 10 per cent. just found in a pocket.

The works of the Michigan Smelting Company, designed to care for the product of Atlantic, Baltic, Champion, Michigan, Mohawk, Phœnix, Wino and Wolverine mines, were seen. At this new plant mechanical pouring was of especial interest. A discussion as to the merits of this method of pouring copper is now on, but automatic casting is certainly a great labor saver. The works are designed for a production of 60,000,000 pounds a year. Mineral moves along through the smelter entirely by gravity. Here are the three largest reverberatories ever built, each having 880 feet of hearth surface and smelting 90 tons daily. Between these are batteries of water tube boilers, heated entirely by waste gases from the furnaces. Electric power is used as extensively as possible throughout this plant.

At the Michigan College of Mines, a visit to which closed the day's programme, two handsome buildings are under construction, one metallurgical and the other athletic. The visitors were shown many large size models of mines of copper and iron, shaft houses and machines, and examined with much interest the collection of minerals and their arrangement for examination and study. This school is doing work of the highest character, and evidences of its thorough and accurate system were plainly visible.

Wednesday morning the party found itself at Ishpeming, on the Marquette iron range. After breakfast Lake Angeline basin, once a considerable body of water, but now honeycombed beneath by the works of three great mines, was surveyed. Then Pioneer Furnace, at Marquette, the largest charcoal furnace in operation and equipped with full wood carbonizing and plants for saving the resulting by-products, was seen. In this plant is 3600 horse-power of Stirling boilers of 300 horse-power each. Eight of them are fitted with Murphy automatic stokers, all also having arrangements for consuming waste gases from the stack. These boilers are assisted by Green economizers and the Sturtevant induced draft system. Crushed bituminous coal and charcoal breeze mixed form much of the fuel charge. The stack is 12 x 70 feet and is running about 140 tons of charcoal iron daily. There are 86 80-cord retorts in the coal battery, and 320 cords of hard wood are consumed daily. By the use of turbines driven by water condensed from the chemical process a considerable part of the power required for handling the processes is derived. The primary stills are at a very considerable hight, in order that all subsequent operations may be under gravity. These works are now making about 140 tons of charcoal, 2560 gallons of tar, 1280 gallons of 95 per cent. refined methyl alcohol and 20,000 pounds of acetate of lime daily.

Luncheon was served at the golf club, where an address of welcome was delivered by Congressman H. O. Young of Ishpeming. He referred to the many mining men who had gone out from there to all parts of the world and specified a large number, most of whom were known to some, at least, of those present. Dr. Raymond responded feelingly and touchingly on the place of the young man as an engineer and the gradual retirement of the old guard. President Jas. Gayley presided. Carriages were in waiting to convey the visitors wherever they might desire to go. A few went underground in a Cleveland Cliffs shaft, but most took the Cliffs drive, with its glorious panorama of view. Thus closed the eighty-seventh meeting. D. E. W.

The Cincinnati Molders' Strike.

CINCINNATI, OHIO, September 26, 1904.—The status of the strike among the molders is apparently unchanged. A few nonunion men have been employed among the several concerns interested, but not enough to carry on the business of the foundries. Several acts of violence have been perpetrated, the most daring being the attack on the men at the Eureka foundry. This latter disturbance has aroused the employers to take decisive action, and caused them to seek the courts for redress and protection. To-day Judge Hosea of the Superior Court of this city issued a "temporary restraining order enjoining the Iron Molders' Union of North America *et al.*, their confederates, servants or agents and any and all persons aiding and abetting them, or any of them now or hereafter confederating or acting in concert with them or any of them, to absolutely desist and refrain from hindering, obstructing or stopping any of the business of the Eureka Foundry Company," and which in its subsequent provisions is considered one of the most sweeping thus far issued.

The Hoop Mill Situation at Youngstown and Girard.—The Carnegie Steel Company is going steadily ahead filling its hoop mills at Girard and Youngstown, Ohio, with competent men. The Girard Works and the upper and lower mills at Youngstown are being operated to nearly full capacity. The 12-inch mill at the upper mills last week beat the record for output. We are advised that there will be no further conferences with the Amalgamated Association relative to a settlement of the strike.

The local organization of the International Association of Bridge and Structural Iron Workers of Pittsburgh and vicinity has presented a new scale to the manufacturers for signature January 1, to run until May 1, 1906. It provides for an eight-hour day, time and a half for overtime and double time for Sundays and holidays; for a minimum scale of $4 per day; for the employment of union men exclusively; for arbitration; and it is also provided that sympathetic strikes shall not be considered a violation of the agreement. The provisions of the new scale are so severe and so completely in favor of the men that it is hardly probable that the employers will sign it.

New York.

NEW YORK, September 28, 1904.

Pig Iron.—Locally the volume of buying has been on a moderate scale. Reports from New England indicate that the buying movement there is still rather heavy for that section, encouraged by rather low prices. Among the recent sales we note one lot of 12,000 tons of Pig Iron purchased by a large Steel works, for forward delivery, in addition to several thousand tons for prompt delivery. The situation in the South has not undergone any material change. We continue to quote $14.75 to $15 for No. 1 Northern Foundry, $14 to $14.50 for No. 2 Foundry and $12.75 to $13 for Gray Forge, tidewater delivery. Tennessee and Alabama brands are $13 to $13.50 for No. 2 Foundry and $12.50 to $12.75 for No. 3 Foundry.

Steel Rails.—It is authoritatively stated that no meeting of the Rail Association has been called for the near future, and that probably no action of any kind will be taken before December for next year's business. Light Rails are still selling at $18.50 to $20, at mill.

Cast Iron Pipe.—On October 12 bids will be opened by the city authorities for quite a large quantity of Pipe for Brooklyn. One of these bids is for the high pressure salt water fire service, and the other for ordinary Water Pipe. The quantity required for the high pressure fire service is about 12,000 net tons of 8 to 20 inch, principally 12 inch. The quantity of ordinary Pipe desired is 1700 tons of 6 to 16 inch. This is an unusually large letting for this time of the year. It will probably bring out a great deal of competition, unless the specifications for the high pressure Pipe should be deemed too rigid by manufacturers. The general condition of the Pipe trade is quite satisfactory. The foundries are still well supplied with work, and the orders received in regular course are running up to a good volume from week to week. Carload lots are quoted at $25 to $25.50 per gross ton for 6 to 10 inch, and $24 to $25 for 12 inch at tidewater.

Finished Iron and Steel.—Contracts are few in the Structural line. Capitalists are slow to come to a decision respecting the erection of buildings which have long been contemplated, railroad companies are doing but little in placing contracts for bridges and other improvements, and the demand for highway bridges is light. Competition is sharp on all work of this character now coming up. A small building in Boston was taken by a New York contractor at an extremely low price, which was much below the figures of other bidders. The Southern Railway Company placed an order for bridge work, amounting to about 4000 tons, which was partly taken by an independent company and partly by the leading interest. The Baltimore & Ohio terminal improvement in Washington, amounting to about 4000 tons, was secured by a New York City firm of contractors. An 1800-ton Cincinnati building will probably go to the leading bridge interest. The bridge companies do not expect much work from railroad interests until toward the close of the year, when the financial arangements will be thrown over into next year. The Plate trade continues exceedingly quiet. The Eastern Bar Iron manufacturers met in this city last week and reduced their price to the equivalent of 1.30c., Pittsburgh, thus placing Bar Iron on the same level with Steel Bars. The meeting was very largely attended, and while some objection was at first made to the reduction the final action is stated to have been unanimously in favor of the reduced price. Some business has come out since the reduction, and it is expected that a larger volume will shortly be reached, as stocks in the hands of consumers are stated to be very small. Specifications on old contracts for Steel Bars are quite heavy. We quote, at tidewater, as follows: Beams, Channels, Angles and Zees, 1.54½c. to 1.80c.; Tees, 1.59½c. to 1.80c.; Bulb, Angles and Deck Beams, 1.64½c. to 1.85c.; Sheared Plates, in carload lots, 1.54½c. to 1.65c. for Tank, 1.64½c. to 1.80c. for Flange, 1.74½c. to 1.90c. for Marine, and 1.74½c. to 2.50c. for Fire Box, according to specifications; Refined Bar Iron, 1.44½c. to 1.49½c.; Soft Steel Bars, 1.44½c. to 1.49½c.

Old Material.—The market is stronger, owing to the revived demand from consumers, who have been taking much larger quantities than for some time. One of the leading Old Material firms in this city reports a heavy business, with sales of over 3000 tons of various kinds of Old Material within 48 hours this week. Included in the week's sales were 1000 tons of Old Steel Rails, 1000 tons of Steel Melting Scrap and 2000 tons of No. 1 Cast Machinery Scrap at about our quotations. Other firms also report improving business, with a tendency to higher prices. The general belief now prevails that the dull season has ended and that a good movement is to be expected hereafter. It is not believed that much higher prices will prevail, but evidently the time for picking up bargains has passed. An Eastern road recently sold a round lot of Relaying Rails at $17, on the line of the road. A fresh lot of 4000 tons of Relayers is offered by one Eastern road and one of 3000 tons by another, on which bids are being received. Quotations per gross ton in New York and vicinity are approximately as follows:

Old Iron Rails	$14.00 to $15.00
Old Steel Rails, rerolling lengths	11.50 to 12.50
Old Steel Rails, short pieces	11.00 to 11.50
Relaying Rails	16.00 to 17.00
Old Car Wheels	10.50 to 11.00
Old Iron Car Axles	15.50 to 16.00
Old Steel Car Axles	14.00 to 14.50
Heavy Melting Steel Scrap	11.00 to 11.50
No. 1 Railroad Wrought Scrap	12.50 to 13.00
Iron Track Scrap	11.00 to 11.50
Wrought Pipe	8.00 to 8.50
Ordinary Light Iron	5.00 to 6.00
Cast Borings	4.50 to 5.00
Wrought Turnings	6.50 to 7.00
No. 1 Machinery Cast	10.50 to 11.00
Stove Plate	8.00 to 8.50

The death of Archer Brown will not cause any change to be made in the style of the firm of Rogers, Brown & Co. The surviving partners will continue the business under that name.

Metal Market.

NEW YORK, September 28, 1904.

Pig Tin.—Until yesterday the market was extremely quiet with little business offering, and but slight effort being made on the part of sellers. Under the leadership of the London market, prices began to advance yesterday morning and business became more active. Buyers who have steadfastly withheld purchases of any considerable size immediately telegraphed inquiries to the merchants here, which added some realism to the general aspect. Prices continued to step up point by point, and to-day they stand slightly above last week's level in this market, while London is just £1 above its figures of a week ago on both spot and futures. The actual business resulting from yesterday's activity is said to be comparatively small. At the close to-day quotations here were 27.85c. to 28.05c. for spot to October deliveries, and 27.75c. for October delivery. The closing London cables named £127 15s. for spot and £128 5s. for futures. The arrivals have been rather light this month, amounting at the present time to 1855 tons. The afloats are figured at 1460 tons.

Copper.—The only feature of interest is that the exportation has continued at a greater pace than was generally looked for. As for domestic business, everything is very dull. The market is unchanged from last week as to price. Present quotations are as follows: Lake, 12.75c. to 13c.; Electrolytic, 12.75c. to 12.87½c.; Casting, 12.50c. to 12.62½c. Another slight advance was scored by the London market, both spot and futures being now quoted at £58 7s. 6d. Best Selected is unchanged at £61 15s. The exports for the month now aggregate 17,433 tons.

Pig Lead.—The market is quiet and uninteresting. Prices are unchanged, the American Smelting & Refining Company quoting on a basis of 4.20c. for "shipment" Desilverized in 50-ton lots. Strictly spot Lead in small quantities is quoted here 4.20c. to 4.30c., while St. Louis telegraphs 4.12½c. The London market is unchanged at £11 7s. 6d.

Spelter.—The market is quieter, although no changes in prices are noted. Spot is quoted here to-day 5.10c. to 5.20c., and St. Louis is quoting 5c. London is slightly easier, owing to shipments now being made from this country to Europe, quoting £22 5s.

Antimony.—Demand is light and the market is easier. Cookson's and Hallett's are quoted at 7c. and other grades at 6c.

Nickel.—The usual amount of business is passing and prices are steady, large lots being quoted at 40c. to 45c. and smaller quantities at 50c. to 60c.

Quicksilver.—The market has declined. Flasks of 76½ lbs. were quoted to-day at $40. London is unchanged at £7 15s.

Tin Plate.—Nothing new has developed in the situation as regards Tin Plate. The market is still quiet and unchanged. A fair amount of business is passing, as is usual at this time of the year. The American Sheet & Tin Plate Company is quoting $3.30 per box, Pittsburgh, for 14 x 20 100-lb. Coke Plates, making the price $3.49, delivered in New York. The Welsh market is unchanged at 11 shillings 7½ pence.

Lewis Lazarus & Sons, London, announce that Emil Baerwald of 29 Broadway, New York, will represent their interests in the United States in Metals and Tin Plates.

The Lake Erie & Western Railroad will install electric motor trains on its Peoria division to meet the keen competition of the electric surface lines. If the experiment is successful an electric passenger service will probably be operated on this system the entire distance between La Fayette and Indianapolis.

HARDWARE.

A MANUFACTURER having goods to sell does not sit down and wait for customers. He is not content with seeking trade by means of circulars and advertising. He goes out personally or sends his men out to sell goods.

The jobber having purchased a large and varied stock is not foolish enough to think that the goods will sell themselves, or that merchants will come into the store in any considerable numbers, even at the invitation of a great catalogue and frequent circular letters. He tries to establish personal relations with the trade in his territory—and sometimes it is a wider territory than it ought to be—and sends out a host of salesmen. They bring in the business.

There are some retail merchants who show a similar spirit and make use of similar methods. Such enterprise is, however, contrary to the general usage of the retail trade. Most retailers believe that good business practice calls upon them to be governed by the following and such like principles:

TO BUY GOODS AT LOW PRICES—a matter to which they give all too little attention.

TO HAVE THEIR STORE WELL STOCKED AND WELL ARRANGED so that customers will be attracted to it—and yet sometimes it is mistaken for a junk shop.

TO ADVERTISE THEIR GOODS IN THE LOCAL PAPERS—but nine-tenths of the advertisements are formal and unattractive and practically resultless.

TO USE CIRCULARS, BOOKLETS, &C., in cultivating trade—but there are many enterprising merchants who do not use this up to date method to any great extent.

In the methods above enumerated there is nothing analagous to the efforts made by manufacturers and jobbers to sell their goods. There is practically a waiting for the trade to come.

We respectfully submit that this policy is not the one for the enterprising and ambitious Hardware merchant of to-day. It may have served as the basis of a remunerative business a hundred or possibly ten years ago, but even then the successful merchants were aggressive and enterprising in going after and getting in touch and keeping in touch with their customers. With the change in methods and the new alertness this keeping within the four walls of the store will not do. All the usual efforts to get people to the store must be preceded and accompanied and supplemented by personal contact and outside work. There must be A GOING AFTER BUSINESS.

How this is to be done is a matter of detail, to which we shall give attention in future issues of *The Iron Age*. Our object at this writing is to emphasize the point that retail Hardware merchants must in a far greater degree than has heretofore been characteristic of the trade go outside their stores in an endeavor to secure and hold customers and directly or indirectly to effect sales.

This does not necessarily involve the employment of persons exclusively for this purpose. Sometimes this may be feasible; in many cases it will not be feasible. Very frequently work of this kind may be done by the members of the firm themselves, or by some of their salesmen, or in some instances even by those occupying comparatively subordinate positions, thus utilizing time which within the store would be employed to less advantage.

This is a subject on which there will be some difference of opinion among merchants. Some of them have refrained from thus cultivating trade because they have not thought of it, but others because they do not think it will pay, or because they do not know how to go about it. We invite the fullest discussion, but are especially desirous of having suggestions from wideawake, enterprising and successful merchants as to practical methods by which retail merchants can increase the success of their business by efforts outside their stores. We have confidence that such suggestions will vindicate the soundness of our contention that there should be on the part of retail merchants not simply a waiting for business to come, but A GOING OUT TO SECURE BUSINESS.

Condition of Trade.

The general Hardware trade of the country is assuming increased volume as the season progresses and business feels the stimulus which comes from fall weather and the approach of winter. Under these influences season goods are in active demand, a fair part of the purchases of the trade covering these lines. Holiday lines are also in more request as merchants who make special preparation for the Christmas and holiday business are getting ready. The trade which the manufacturers are doing with the jobbers and the better class of retail merchants does not show a great deal of snap and many of the orders are for moderate quantities. It is evident that the purchasers are acting conservatively and are indisposed to order as liberally as has been characteristic of the trade within recent years. The market shows few developments in the matter of prices, which, in the presence of the recent declines in the raw material and in the face of a somewhat restricted demand, are excellently maintained. In fact, many kinds of goods are unquestionably low, the labor costs especially showing little if any diminution. Merchants are looking forward hopefully to the business of October, notwithstanding the interest in the Presidential canvass. There is general satisfaction expressed that whatever may be the result of the election there is no reason to apprehend a disturbance of commercial and industrial prosperity or anything in the way of a financial revulsion. While it is to be expected that attention to political matters will increase in a marked degree during the next few weeks, it is hoped that this will not greatly interfere with the regular course of current business. Fortunately with the existing well being of the people, against which even the agitations of labor unions can have only a temporary and limited influence, and with the promise of at least fair if not heavy crops, there is good reason for hoping for a continuance of the general prosperity and of a remunerative trade. With the domestic situation giving little ground for complaint and some things pointing to an improvement next year, the constantly growing export business of the country is an interesting and important factor in the market broadly viewed. With the United States entering with an increasing volume of trade into the world's markets there is furnished an additional basis for prosperity at home.

Chicago.

(By Telegraph.)

There is no change in the Hardware situation either in prices or conditions. A good business is being done both by local retailers and by jobbers. As a general average, business is if anything a little better than the corresponding week last year. Some crop reports are disappointing, but now that the corn crop is practically

out of danger from frost, it is certain that the crops of the West in the aggregate, in terms of prices which farmers will receive for them, will mean a vast increment to the wealth of the agricultural population, with a corresponding favorable influence upon the Hardware trade. Builders' Hardware is probably the most active branch of the trade, both in the city and throughout the West. A lively demand is felt for Furnace Scoops, Hods, Pipe, Elbows and the like. Wire Nails are very active and Barb and Smooth Wire fairly so. It is becoming more and more evident that the bad blood existing between the two leading Pittsburgh producers of Wire products is being reflected in a competition which, in some instances, sends the price 10 cents below the schedule fixed. In every instance delivered prices are being named and it is possible that the reductions in prices encountered are the result of special freight rates obtained by Eastern producers in their war against the Colorado factor, though reductions referred to are not in disputed territory. In Kansas, Colorado, Oklahoma, Indian Territory and the disputed ground in general, prices are made to suit conditions, with but little reference to the Pittsburgh base price and the freight cost. The Board of Inspectors of the House of Correction, Chicago, are in the market for an indefinite quantity of Hardware to cover their needs for three months, beginning October 1, though it is not definitely stated in the advertisement that bids will close October 1. The list is a long miscellaneous one, but quantities are not given, buyers being asked to give their bids per dozen, box or gross. Last week's meeting of the Bolt Association failed to arrive at any understanding or to do anything to clear up the present unsatisfactory situation. Prices continue badly cut on Hot Pressed Nuts, Washers, Carriage, Stove and Machine Bolts.

NOTES ON PRICES.

Wire Nails.—In the Eastern section of the country prices appear to be very firm, large buyers claiming they are unable to obtain any advantage over official quotations. In the West and Southwest, which has been termed disputed territory, considerable unevenness in prices is reported. There is a steady and increasing demand, confined by the principal manufacturers, however, to shipments within 30 days from date of contract. The arbitrary differentials between the jobbing and retail trades are not rigidly enforced, the carload price being accessible to carload buyers of either class. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carload lots	$1.60
Less than carload lots	1.65

New York.—Local demand continues good, while inquiries are received regarding forward shipments. The market is steady at the following New York quotations: Single carloads, $1.79½; small lots from store, $1.85 to $1.90.

Chicago, by Telegraph.—Business is active and mills are having difficulty in meeting the wishes of buyers as to delivery. Prices of the leading producer are: In carload lots to jobbers, $1.75; to retailers, $1.80; less than car lots, $2 per keg, Chicago. From these prices a confidential rebate is given to jobbers to permit them to compete with a large independent, who gives the above prices direct to the retailer or consumer in car lots.

Pittsburgh.—We note a steady improvement in demand for Wire Nails, which are moving out quite freely from the mills. The principal makers continue to refuse to make contracts for Wire Nails, except for shipment within 30 days from date of contract. There is a feeling in the trade that prices of Wire Nails will not be lower, but with a good fall trade may possibly advance. Prices are very firm, except to one Far Western point of shipment, but this does not affect the local market in any way. We quote Wire Nails as follows: In carload and larger lots to jobbers, $1.60; carload lots to retailers, $1.65; less than carload lots to jobbers, $1.65; less than carload lots to retailers, $1.75.

Cut Nails.—Some of the mills which were closed down have not yet been started, but those in operation appear to have no difficulty in meeting the requirements of the trade. Demand is moderate and association quotations in a general way represent the market, but the prices are sometimes shaded about 5c. to large buyers. Quotations are as follows: $1.60 and $1.65 for carload lots and less than carload lots, respectively, f.o.b Pittsburgh. In the East Iron Nails are quoted at the same price as Steel Nails, but in territory west of Pittsburgh Iron Nails are quoted in carload lots, f.o.b. Pittsburgh, at $1.65, with an advance of 10c. in less than carload lots.

New York.—In the local market demand continues in about former volume. The market is firm at figures announced at the last change in prices. Quotations are as follows: Carloads on dock, $1.74; less than carloads on dock, $1.79; small lots from store, $1.85.

Chicago, by Telegraph.—From the association price of $1.60 for car lots, and $1.65 for less than car lots, Pittsburgh, with full freight to destination, from 5 to 6½ cents rebate or allowance is being named to large users. Business rather more active than a week ago, but the Wire Nail producers are getting more than their share of the trade as compared with Cut Nails.

Pittsburgh.—We note a moderate demand for Cut Nails, and the tone of the market is fairly firm. We quote: Steel and Iron Cut Nails at $1.60 in carloads and $1.65 in less than carloads.

Barb Wire.—Orders are reported as being moderate in volume from the Eastern section of the country, while the Western mills are experiencing an active business. The principal makers are not accepting orders for a longer period than 30 days. The regular schedule of prices is as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.75	$2.05
Retailers, carload lots	1.80	2.10
Retailers, less than carload lots	1.90	2.20

Chicago, by Telegraph.—Business is active and mills are not always able to make as prompt deliveries as buyers require. We quote: Jobbers, car lots, Painted Wire, $1.90; Galvanized, $2.20; retailers, car lots, Painted, $1.95; Galvanized, $2.25; less than car lots, Painted, $2.05; Galvanized, $2.35; Staples, $1.85; Galvanized Staples, $2.15. The jobbers' prices are named to large retailers by certain independent mills.

Pittsburgh.—Demand for Barb Wire does not seem to have been stimulated by the reduction in prices, the tonnage being entered by the mills being of only moderate volume. The principal makers of Barb Wire will accept contracts only for shipment within 30 days. Prices are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.75	$2.05
Retailers, carload lots	1.80	2.10
Retailers, less than carload lots	1.90	2.20

Smooth Fence Wire.—Quick shipments are interfered with from mills on account of the large tonnage booked. A shortage of cars is also reported from the Pittsburgh district. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.45
Retailers, carloads	1.50

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base.	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago, by Telegraph.—Business is good and mills are with difficulty able to supply the demand for quick shipment. Prices are unchanged, on the basis of $1.45, Pittsburgh, which, with the arbitrary 15 differential, makes the Chicago price on Nos. 6 to 9, Annealed, $1.60; Galvanized, $1.90, in car lots, with the usual extra for lighter gauges.

Pittsburgh.—There has been a perceptible increase in demand for Smooth Fence Wire, several of the local mills advising us they have all the tonnage they can handle. A shortage of cars has again cropped up in

this district, which is retarding shipments to some extent. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.45
Retailers, carloads	1.50
Less than carloads	1.60

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

Shot.—The following advanced prices for Shot are announced under date September 27, terms net cash, 30 days, or 2 per cent. discount for cash in 10 days, with the usual abatement on orders for ton lots and upward, shipped at one time:

Drop Shot, sizes smaller than B, per 25-lb. bag	$1.65
Drop Shot, B and larger sizes, per 25-lb. bag	1.90
Buck and Chilled Shot, per 25-lb. bag	1.90
Dust Shot, per 25-lb. bag	2.25

Glass.—The third conference of the Amalgamated Window Glass Workers with the manufacturers began on the 22d inst., at Erie, Pa. According to reports an agreement was reached on a wage scale for the fire of 1904-1905 after a three days' session. The basis is apparently a reduction in last year's scale, but as so many private scales were in use it is difficult to make comparisons. The general impression is that most of the factories will start up early in October, and that some new Glass will be on the market by the first part of November. New York jobbers have discontinued the use of the jobbers' list of December 16, 1902, and have adopted the jobers' list of October 1, 1903. This brings the latter list into almost universal use, if not entirely so. Discounts from this list, in New York, are 90 and 5 per cent. on the first two brackets, and 90 and 15 per cent. on all larger sizes. It is understood that manufacturers having stocks of Window Glass are quoting from 90 and 5 to 90 and 10 per cent. discount from the manufacturers' list of January 1, 1901.

Oils.—*Linseed Oil.*—On the 22d inst. the price of Linseed Oil was reduced 2 cents per gallon, on a declining seed market. The demand is confined largely to jobbing lots, with little desire on the part of purchasers to buy in car lots. State and Western Oil, it is understood, can be purchased in carload lots at 38 cents per gallon. Quotations are as follows: City Raw, in lots of five barrels or more, 43 cents per gallon; in lots of less than five barrels, 44 cents per gallon; State and Western Raw, 41 to 42 cents per gallon, according to quantity. For Boiled Oil there is the usual 2 cents advance per gallon over Raw.

Spirits Turpentine.—Owing to a more active Southern market, due to a good export demand, and light supplies at New York, the market has assumed a firmer tone, making ½ cent advance over last week's quotations. Buyers are confining purchases to moderate lots. Quotations in this city, according to quantity, are as follows: Oil barrels, 56 to 56½ cents; machine made barrels, 56½ to 57 cents per gallon.

THE JOBBERS' AND RETAILERS' COMMITTEE ON THE CATALOGUE HOUSE QUESTION.

THE work of the Wholesale and Retail Joint Committee on the Catalogue House Problem has not been neglected during the summer, and some of the results of the committee's efforts are already apparent. Others will be in evidence doubtless in due time. In this connection the following advices from T. J. Fernley, general secretary of the joint committee, will be of interest:

The Wholesale and Retail Hardware Joint Committee, which was formed at a meeting of the representatives of the retail and wholesale dealers held in St. Louis June 23 and 27, has been actively at work since that time calling attention of the trade in general to the catalogue house question and inducing manufacturers to use their best endeavors to prevent, in some way, a demoralization of prices.

The manufacturers have generally admitted that the quantity of goods sold by catalogue houses was extremely small when compared to their total production, and have begun to realize that it is not to their interest to have quotations made which prevent those who distribute their goods to retailers and to consumers from making at least a margin of profit to cover the services rendered.

The committee has not attempted any coercive measures, believing that our contention was just and that it was but necessary to properly present the matter to have the manufacturers apply the remedy. We are standing on the platform adopted in St. Louis, which was fully outlined in your columns. A very large number of manufacturers have signified their intention of immediately discontinuing the sale of goods to catalogue houses. The complete list will be furnished the retailers of the country from time to time through your columns.

Some of the most prominent manufacturers who have taken this stand are the following:

Henry Disston & Sons.	Russell & Erwin Mfg. Co.
Stanley Works.	Hussey & Binns Shovel Co.
American Axe & Tool Co.	Evansville Tool Works.
Fayette R. Plum, Inc.	Kelley Axe Mfg. Co.
H. B. Black & Co.	Finley Axe & Tool Co.
Covert Mfg. Co.	Germantown Tool Works.
Norton Tool Co.	Hopkins & Allen Arms Co.
Hermann Boker & Co.	White Mountain Freezer Co.
Hamilton Rifle Co.	J. Stevens Arms & Tool Co
James H. Mann.	McKinney Mfg Co.
Mann Edge Tool Co.	F. E. Myers & Co.
Eagle Lock Co.	Schollhorn Co., and many
Dunn Edge Tool Co.	others.

We most respectfully invite communication with the jobbing and manufacturing trade on this question. The retail trade will please address their communications to M. L. Corey, secretary, Argos, Ind. We find the leading jobbers of the country are opposed to selling this class of dealers. The members of the National Hardware Association have reaffirmed the position which they took several years ago.

One of the catalogue houses has recently issued a new book, in which we find quite a number of prices have been advanced to a proper standard. Thus it will be seen that the work of our committee is bearing fruit.

We have read with interest the articles appearing in the trade papers from time to time on this subject. We regret that these did not appear over the signature of the writer. The members of our committee would be pleased to answer communications which have an identity, but we have felt that articles that appear in trade papers without the signatures of the writers should not be dignified with a reply over the signature of our committee.

T. J. FERNLEY, General Secretary.

AMONG THE HARDWARE TRADE.

The Culbertson Hardware Company, Auburn, Ind., has been incorporated, with a capital stock of $7000. Hugh R. Culbertson, Frank E. Draggoo and Robert D. Welch are incorporators.

Brand Hardware Company, just organized, will commence business in Houston, Miss., on October 1. The firm will carry Furniture in addition to a general Hardware line.

J. K. Hefron & Co. have purchased the Hardware and Lumber business formerly conducted by F. R. Dally, Redding, Iowa.

Wilson Hardware Company, Washington, Iowa, has closed out its Hardware stock, and will hereafter devote its exclusive attention to the Furnace and Heating line.

Palmer & Gayley, successors to Palmer Bros., Chester, Pa., are making radical improvements in their Hardware store by which their facilities for carrying on their enlarged business will be materially increased.

E. C. Kammann, dealer in Hardware, Stoves, Tinware, Paints, Sporting Goods, &c., Mascoutah, Ill., has been succeeded by Hucke-Kammann Mercantile Company. The business has been removed to a newly erected and more spacious building, which will permit the carrying of a larger stock than heretofore.

DEATH OF EDWARD K. TRYON, JR.

EDWARD K. TRYON, JR., senior partner of the firm of Edward K. Tryon, Jr., & Co. of Philadelphia, died suddenly at his home at two o'clock on Monday, September 19, from appoplexy. Mr. Tryon had been ill for about two weeks, but had shown such marked improvement that his physicans had given every assurance of his speedy recovery.

Mr. Tryon was in his sixty-first year, having been born in Philadelphia April 14, 1844. He received his education in Friends schools and the Germantown Academy, but at a very early age he entered the employ of the Tryon firm, then composed of his father, Edward K. Tryon, and brother, George W. Tryon, Jr., who were established in business at 625 Market street, and also at 220 North Second street, the site of the original establishment, which was founded in 1811 (The Sign of the Golden Buffalo). In 1863 this copartnership was dissolved, the

EDWARD K. TRYON, JR.

senior Tryon retiring, Edward K. Tryon, Jr., and his brother forming a partnership under the name of Tryon Brothers, which partnership continued in existence until 1868, when George W. Tryon, Jr., retired. The firm then changed to Edward K. Tryon, Jr., & Co., which name the copartnership retains at the present date, Edward K. Tryon, Jr., having remained the senior partner until the time of his death, the firm now occupying the premises at 10 apd 12 North Sixth street and 611 Market street.

While Mr. Tryon was still a boy the family moved to his father's country place, Pittville, near Germantown, where Mr. Tryon spent his boyhood days, which property has been purchased by the United States Government and is now one of the national cemeteries. Mr. Tryon had been in active business all his life, but about ten years ago relinquished part of his business affairs, determining to devote the time thus gained to charitable and philanthropic work. At the time of his death he was a member of the Board of Directors of the Home Missionary Society of Philadelphia, a director of the Evening Home and Library Association for Boys, of which institution he was one of the founders and for a number of years its president; a member of the Board of Corporators of the Women's Medical College and Hospital, a director of the Trades League of Philadelphia, a member of the Academy of Natural Sciences, a member of the Historical Society of Pennsylvania and a trustee of the "First Unitarian Society of Philadelphia."

At the time of the battle of Antietam, when President Lincoln issued his call for 75,000 men, Mr. Tryon enlisted and served a short time with the Pennsylvania Volunteers. He is survived by a widow and two children, and his surviving copartners in the firearms firm are Edward B. Mears, Jr., Evan G. Chandlee and Charles Z. Tryon. In the death of Edward K. Tryon, Jr., the community loses a clean man, one whose voice was always for right methods in business, and whose integrity, fidelity and honesty endeared him to his many friends, who profoundly mourn his loss.

TRADE ITEMS.

THE VAN WAGONER COMPANY, Cleveland, Ohio, has moved its New York branch, in charge of A. A. Fonda, from 253 Broadway to Room 503, 105-107 Chambers street. At this Eastern headquarters it will carry a full stock of Van Wagoner Ball Bearing Spring Hinges, Top of Door Springs, Screen Door Spring Hinges and other goods of its manufacture.

R. T. WALLACE, auditor and confidential man of the Lufkin Rule Company, in charge of the office at Saginaw, Mich., recently visited the East on a vacation trip accompanied by Mrs. Wallace. Their time was largely spent in New York, Philadelphia, Baltimore, Washington and Buffalo.

FRED BUCK, vice-president and manager of the Lufkin Rule Company, Saginaw, Mich., recently returned from Europe on the "Oceanic," accompanied by his family, who have been spending the last 14 months on the Continent. With the exception of a brief flying trip here at the beginning of the year Mr. Buck has been devoting his energies largely to establishing the business of their new London branch house, now in charge of Mr. Bexfield.

DENNIS J. MCLAUGHLIN, for a number of years president of the Chicago Retail Hardware Dealers' Association, is candidate for County Commissioner on the Demotratic ticket.

THE next annual convention of the National Association of Agricultural Implement and Vehicle Manufacturers will be held at Chattanooga, Tenn., November 16, 17 and 18. These dates were selected by the Executive Committee at a special meeting held in Chicago September 5. F. E. Lukens, Chicago, is secretary of the association.

MAYER & CO., Philadelphia, Pa., manufacturers of Gold Medal Files, advise us that there has been a material gain in the volume of business during the past month, and the nature of the inquiries received indicate a still further improvement in the near future. These parties have recently established a Canadian branch in Montreal, Canada, and say that export business has improved considerably. Besides the general line of Files, Mayer & Co. will shortly engage in the manufacture of a line of Manicure Files for the trade.

THE officials of the Standard Horseshoe Company, Boston, Mass., handsomely entertained their employees on Labor Day at a picnic given at Warr's Grove, Wareham. Field sports consumed the morning and early afternoon hours, following which was an excellent clambake. The gathering was a most enjoyable one, and undoubtedly contributed much to the harmonious relations which already existed between the company and its employees.

As announced in a recent issue, Callender Hardware Company has bought the business formerly conducted by Snyder & Co., at Angola, Ind., and will continue at the old stand. The reference, however, to another store at Hicksville, Ohio, carried on by Callender Brothers, was erroneous.

T. McCleland Hardware Company, Jackson, Miss., is erecting a new three story brick retail Hardware store, 60 x 150 feet. This building will be equipped throughout with Warren Shelving. Besides the new structure the McCleland Company has warehouses with an aggregate floor space of about 50,000 feet. Since recently reorganizing the business, with a capital of $100,000, the house is doing quite a large jobbing trade.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

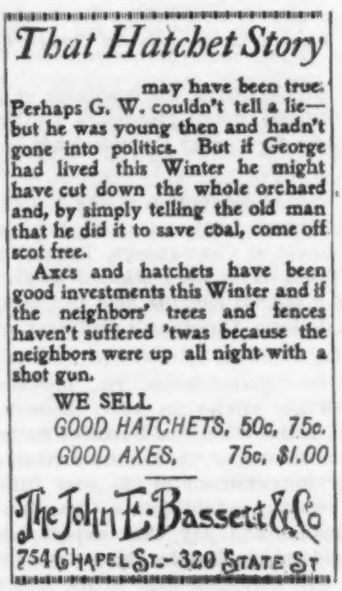
A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

PRACTICAL HINTS CONCERNING HARDWARE STORE ADVERTISING. I.

BY GEORGE J. BASSETT.

NEWSPAPER ADVERTISEMENTS.

THE papers abound in jokes about "the man who doesn't advertise." It's almost as fertile a subject as the ice man or the mother-in-law. But underneath it all is a great big truth and that is that people are apt to trade at the store that attracts them most. And advertising is one of the best methods of attracting people. Although there are mediums of advertising which in individual cases and at certain times are equal to and sometimes even better than newspapers, yet it is a fact generally conceded by people who have made advertising a study that no other medium will reach so many people at the same cost as the daily or weekly newspaper. It


That Hatchet Story
may have been true.
Perhaps G. W. couldn't tell a lie—but he was young then and hadn't gone into politics. But if George had lived this Winter he might have cut down the whole orchard and, by simply telling the old man that he did it to save coal, come off scot free.
Axes and hatchets have been good investments this Winter and if the neighbors' trees and fences haven't suffered 'twas because the neighbors were up all night with a shot gun.
WE SELL
GOOD HATCHETS, 50c, 75c.
GOOD AXES, 75c, $1.00
The John E. Bassett & Co
754 Chapel St.- 320 State St

is, therefore, best in laying out a scheme of advertising to start with the newspaper as the central medium and make such other advertising as one sees fit to employ supplement his newspaper advertisement.

Why Some Advertisers Fail.

Yet many a Hardware dealer will say that he has tried the papers and that they are no good. But was it a fair trial? He paints his sign on a rail fence and leaves it to rot and fade by the wayside, and he leaves his newspaper ad. to rot and fade in the same way. He insults the intelligence of the public if he expects them to waste their time reading week after week some such advertisement as this:

JOHN JONES & SON,
Dealers in
Hardware and Paints, Farming Implements, etc.
At Lowest Prices,
Main Street, Piketown.

He is apt to square it with himself by saying that he is "keeping everlastingly at it" and "keeping his name before the public." That's just where he makes his greatest mistake, for he is keeping himself before his readers as an example of business lethargy. He has gone to sleep before the public.

What an Advertisement Should Be.

Your advertisement, then, should tell your prospective customer something he does not already know. It should be worded so that it will interest him, and it should be changed at least once a week. It should tell him each time about some one thing he may need in such a way that when he needs that one thing he will naturally look for it at your store. And, above all, it must impress him with the fact that the price will be a little lower or the article a little better than he'll find at your competitor's. There will be no question in your mind as to whether such advertising pays after you have once given it a fair trial.

HOLDING AND BUILDING UP TRADE AGAINST OUTSIDE COMPETITION.

BY A NEW ENGLAND HARDWAREMAN.

THE consumer is the man that all are after. Many manufacturers and jobbers go direct to him regardless of the retailers and the retail mail order catalogue houses command his trade in many places. Notwithstanding these conditions there are many retailers who hold the trade of their localities and they do it by doing business in a thoroughly modern way—by being well equipped with capital to carry on business, carrying stocks well adjusted to the demands of the localities, goods classified, conveniently and attractively arranged and displayed, giving judicious attention to advertising, selling high grade goods at legitimate prices, representing things as they are, standing back of them and giving satisfaction to their customers, doing business thoroughly, promptly and safely, having cash and credit methods in use that are thorough in detail, and systems of delivery that insure promptness, and from which positive records are obtained, showing that no goods are being delivered without having been charged or paid for. The law of nature—the survival of the fittest—applies to trade. That the retailer has been in many places doing business in an old-fashioned way and in an old-fashioned store has given the retail mail order catalogue houses their great opportunity. The way to get around the catalogue house is not by organization and agreement among retailers and jobbers to buy no goods from makers who sell to this trade—the boycott does not belong in America. It is up to the retailer to get his business on a modern up to date basis and to hustle for the trade of his locality. He can command the cream of that trade if he shows his customers that he is worthy of it. He should be thoroughly familiar with his business—learning, improving, and doing something all the time. He should be able to handle anything that comes up in his line, to take measurements, details, &c., of the many odd things that have to be ordered specially, and often made to order. The builders' Hardware business should not be a mystery for the retailer; he should be thoroughly familiar with building plans and specifications and effect sales without the help of the factory salesman; he should get after the mill and factory trade with low prices. They will generally favor the local man who

Up to Date Methods

How to Meet Catalogue House Competition

Thorough Knowledge of the Business

has the stock and can make prompt deliveries, and it is certainly wise to sell this trade at close prices rather than to lose it altogether, as generally their credit is sound and their payments prompt. The tool and cutlery trade can be held by having the stock from which to offer good selections—people like to inspect what they are buying—by letting customers understand that if goods are not right they will be made right. The retailer can sell many goods under his own brands—reliable goods that go out hustling for him instead of the makers whose names they generally carry. Many dealers believe they have to handle certain brands of Saws, Hammers, Axes, Knives, Razors, Shears, &c.; that their trade demands it. When these goods fail to give satisfaction the retailer makes the adjustment with the customer, and he might just as well sell his own brands, for the customer relies on him to a great extent for the selection, and the dealer who is building up a reputation for square dealing is not recommending an article which he believes inferior to a special maker's brand.

Businesslike Methods

System is the great factor that enables manufacturers, jobbers, department stores and catalogue houses to do business on close profits. Safeguard methods are in use by them which insure thoroughness and quick action all along the line, and goods do not get away from them without being properly booked, nor is credit given indiscriminately. In these days of sharp competition the retailer must do business safer; no goods should be delivered without having a record that they have been charged or paid for; the doubtful men should be turned down; customers should be made to understand that bills are due according to terms, that profits are close, and long time cannot be given without charging higher prices. These are days of education, and of all distributers of goods the retailer has been the slowest in credit matters. A merchant prides himself on having a reputation for paying his bills promptly, and the consumer should be impressed with the importance of this same thing.

How the Retailer Can Hold His Own

Manufacturers will continue to sell to the retail mail order catalogue houses; manufacturers will continue to sell to the retailers, for it is a well-known fact that the retailer is the principal introducer of goods, for which the jobber later finds a demand. And, further, the retailer is the main distributer of the finer goods which many manufacturers make and for which most jobbers and catalogue houses have no trade.

Manufacturers, jobbers and catalogue houses will continue to sell direct to the consumer, but the retailer is bound to be the most important factor in the distribution of goods direct to the consumer.

THE HARDWARE TRADE OF THE FAR NORTHWEST.

FROM A SPECIAL CORRESPONDENT.

AN Eastern Hardwareman would be impressed by two things in going through almost any of the larger Hardware houses of the far Northwest. The large stocks carried out here would surprise him—and the great variety of the

Wide Assortments Carried in Stock.

Not only will be found in any of the jobbing stocks here, as fine a class of builders' and general Hardware as is sold in any Eastern city, but also fine Tools and Cutlery, Farm and Garden Implements, Blacksmiths' and Wagon Makers' Supplies, Sporting Goods, Heavy Hardware, Iron and Steel, also Mining Tools, and the Seattle houses handle Ship Hardware as well.

Why Large Stocks and Great Assortments are Carried.

Hardware jobbing has paid big in the West, but it now requires large capital to carry on the business. Stocks are large because of the distance from the markets, and large variety of goods is necessary because of the great diversity of the trade.

New Seattle Warehouses.

The two largest Seattle jobbers are erecting new buildings to better handle their trade. The foundations are just completed for the new warehouse of the Seattle Hardware Company. This building will be a model in many ways, and is to be of heavy mill construction. A siding from the Northern Pacific Railroad enters the building in the rear, which will enable the Seattle Hardware Company to receive goods and make shipments with greater dispatch. This concern has upward of a million dollars invested in the Hardware business.

Spokane as a Wholesale Center.

Spokane, Wash., is fast becoming an important wholesale center. Three Hardware houses are competing here with Eastern jobbers for the Central and Western Washington trade. One of these wholesalers—McGowen Bros.—has just completed a large warehouse, located on the main line of the railroad, to better handle their fast increasing jobbing trade. Another of Spokane's Hardware jobbers—Jensen, King, Byrd Company—will, this winter, build a large store and warehouse. The building up of this Northwestern country has been much aided by the energy and push of the Hardwaremen. The success that has come has been earned by hard work and constant close attention to business.

What Irrigation Is Expected to Accomplish.

With millions of dollars now being spent by the Federal Government and by private corporations in irrigation, many hundreds of thousands of acres will be opened up to the farmer. The next few years will see great development in farming and fruit raising, and will bring into the Northwest that which is most needed—people.

Unique Boise City.

Boise City, Idaho, probably contains the largest stocks of Hardware, in proportion to size, than any city in the world. Boise has a population of about 13,000. There are six large Hardware and Implement houses, with stocks aggregating about $900,000. In the same ratio a city of Chicago's size should have nearly $250,000,000 invested in these lines.

The Reason For It.

When asked why such stocks were carried Mr. Teller of Fletcher, Eastman, Teller Hardware Company, said: "A large portion of the business here is in Mining Tools, Machinery and Heavy Hardware. Our customers want these goods quick—we have to have the stock, as we are far from the markets."

Nature's Hot Water Reservoir.

Another rather unique feature of the heating in Boise, is that many of the houses, offices and stores are heated by natural hot water. A short distance from the city an artesian well furnishes great quantities of hot water. This being on a hillside above the city, H. B. Eastman, one of Boise's enterprising citizens, perfected a plan for bringing this water into the city for heating purposes. The water is 180 degrees F., and flows constantly. The scheme for heating a city by natural hot water is distinctively and exclusively a Boise idea; and in the low cost of heating and novelty this Idaho city is probably without a rival in the world. E. D. I.

THE CHICAGO RETAIL HARDWARE DEALERS' ASSOCIATION gave a smoker and vaudeville performance in its meeting hall in the Masonic Temple, Chicago, Friday evening, September 23. Every Hardware dealer in the city and county was invited to be present, and a large number of supply men were also invited as guests. The purpose of this hospitality was to awaken general interest in the Hardware association, its aims and objects, and to increase the membership as much as possible. The present enrollment is almost 200 members. H. E. Gnadt is president and J. D. Lott secretary. A feature of the Chicago Association is a system of co-operative buying conducted by a committee appointed for that purpose from members of the association.

THE TEXAS RETAIL HARDWARE, IMPLEMENT & VEHICLE ASSOCIATION will meet in annual session at Dallas, Texas, October 11 to 13, inclusive.

FACTORY COST AND BUSINESS METHODS.

THE DESIRABILITY OF ENCOURAGING SUGGESTIONS FROM EMPLOYEES

THE descriptions we have given of several methods adopted by manufacturers for encouraging their employees to make suggestions in regard to the work of the factory have evidently been regarded with much interest by manufacturers. We have received many letters in which the subject is touched upon. The writers of some of these are skeptical in regard to the success which attends such efforts, and apparently regard the working force as lacking in intelligence and in interest in what they are doing. Others, and not a few representative manufacturers, are evidently desirous of calling out the best there is in their employees and find that their suggestions are often of value. A still larger number of manufacturers who recognize the desirability of receiving suggestions from their hands are perplexed in regard to the best method of securing this co-operation. The following extracts from letters on this subject touch on the various phases of the question as seen by our correspondents:

The Yankee Element and Organized Labor.

From a Manufacturer in New Jersey: We have read with interest your articles upon encouraging employees to make suggestions. The sources from which these articles come are suggestive. Massachusetts, Rhode Island and small towns in New York report favorably. Illinois, Indiana and larger cities give little encouragement. There are two reasons for this. In the first class there is a greater proportion of the native or Yankee element. In the second, a larger percentage of foreigners and a stronger development of organized labor. There is no room for progress in the present principles of organized labor. Briefly stated, their object is to have each man accomplish the least possible labor for the largest possible pay. This distributes the work among the largest number of men, and this is the object for which the unions claim to labor. The development of this theory is costing this country millions of dollars every year, and is threatening the existence of English mechanical enterprise.

Very few helpful suggestions come from foreign workmen, and those who offer them are likely to be considered friendly with the officials to the prejudice of the unions.

Encourage Initiative

We believe in encouraging initiative among workmen, even to the extent of allowing a bright man to work on a plan of his own, although it may be no improvement. An enterprising man will work with more interest and often with better results if he is developing a plan of his own than if required to follow a possibly better method in which he feels no particular interest. Our men are largely German or of German descent. We get a few useful suggestions from the foremen of departments, but none from the men.

An Unsatisfactory Suggestion Campaign.

From a Large Western Manufacturer: We have at different times offered prizes for suggestions from our employees, these suggestions to be on matters pertaining to the betterment of the manner of constructing our machines, the employment of methods which would lessen the cost of production, &c. The prizes were in cash and were awarded monthly. The contests were carried on for a year or so, and the attention of our employees was called to them by means of bulletin boards, a small factory publication, and in other ways.

The results were not entirely satisfactory. We noticed that the number of men making suggestions was very small compared to the number on our pay rolls, and as time elapsed it was also noticeable that the suggestions were all made by practically the same men month after month. It was also noticed that the suggestions came almost entirely from the skilled workmen of a few departments, and no replies were received from the vast majority of our employees. The suggestions generally were good, and indicated that the men making them were quick to see a chance for improvement. Sometimes good suggestions were made which it was not practical for us to carry out, although we awarded prizes on the basis of merit, even though we could not always put the suggestions into immediate practice. However, we could not maintain the desired interest in the contests, and after failing to receive a single response to the last series of three cash prizes we reluctantly discontinued them.

Same Men Each Month

Our conclusions are that employees are content to do their work as instructed, and that not one in ten cares for suggesting anything new that will facilitate or improve factory conditions, which would, of course, be of mutual interest.

Not One in Ten Interested

Contribute Little in the Way of Suggestions.

From Illinois Manufacturers: Whether we have a lower grade of intellect employed in the West than prevails in Eastern shops or not it is impossible to say, but we are unable to secure much assistance from our employees in the direction of improvement, either in output or quality.

Employees Have Helped Materially.

From Manufacturers in New York State: We have a factory full of machinery and every piece is the outcome of the proprietors and employees working in perfect harmony under good pay and direct remuneration for improvements. It has occurred within a month that an idea fought over for years, experiments costing hundreds of dollars, was developed by a well paid workman into one of the neatest, most complete and simple working pieces in our factory. Our experience is that daily good wages develop the best and most willing men.

Didn't Work Well.

From Michigan Manufacturers: We tried the idea several years ago and it did not work well. Several employees quit because they thougat the prizes should have been awarded to them instead of to those to whom they were given.

Compensate Employees Very Liberally.

From Ohio Manufacturers: The plan outlined in *The Iron Age* has our heartiest indorsement, although we have not followed the same up systematically. We have never let an employee think that any effort along this line was not appreciated. On the other hand, we have an understanding with all our most capable employees that their suggestions are most acceptable, and where any improvements that they may suggest are found to be patentable we compensate them very liberally and take out the patents in our employees' names, assigned to us. We have done this quite frequently and it is quite an incentive. Kindness, dignified approach and consultation with them, in our opinion, has a great deal to do with gaining their confidence and making them feel that the interest they manifest is appreciated and that they will be compensated therefor.

Appear to Fear Innovations.

From a Manufacturer in Indiana: We have made one or two efforts in the direction of securing suggestions from our employees and offered liberal prizes in gold for the best suggestions. Out of a force of about 50 employees we received suggestions from only three and some of them were wild in the extreme. Other attempts in the same line have proved just about as unsatisfactory as the first one. With the exception of one or two employees there seems to be a dearth of ideas in the remaining portion of the laboring class, or else they fear some innovation which would affect the amount of labor they will have to do.

Valuable Ideas Can Be Obtained.

From a Plant in West Virginia: We have had no experience in the matter of prize competition for suggestions, but we know from observation that valuable ideas can be had from the man who makes the goods, and this factory has always tried to give due credit to the man who took enough interest to offer suggestions. A true and loyal interest on the part of the employee is, it seems to us, the ideal condition, and any scheme to bring it about should undoubtedly be encouraged.

Depend on Foremen and Specialists.

From a Maker in New York State: No doubt it is wise for an employer to encourage workmen to make suggestions as to the way articles may be made better and cheaper, but my experience has been that if a workman invents something he will get it patented, although he has used his employer's time in experimenting. We depend more upon the foremen and specialists than on the workmen for suggestions.

Many Improvements Due to Employees.

From a Minnesota Manufacturer: Our factory is a small one, employing about 60 men. Our superintendent, being

personally acquainted with all of the employees, has always made it a rule to give the employee perfect liberty in making suggestions, and in this way has talked maters over with them, and a good many improvements in our line have been suggested by different men in the factory. They all seem to be eager to see the company succeed, and to take pride in the good quality of machinery. We have never offered any premium for the best suggestions, but will consider this matter carefully, as we think there is something in it.

Plan Worthy of Adoption.

From Another West Virginia Manufacturer: We think the idea of suggestions from employees a most excellent one and worthy of adoption. We have not had much experience along this line except with our four foremen. These men are each the head of a department, and every quarter we distribute several hundred dollars among them, the amount varying with the way business has been during the time. We have found this quite a benefit in the way of stimulating energy, watchfulness and economy, and it has had quite an effect in the way of increasing our output, each feeling that the larger the business the greater will be the reward. Nearly all of our employees are on piece work, and, of course, the output, whether it is large or small, would not apply equally to the foremen, who are on a salary basis, unless from the extra compensation dependent on the amount of business done. We will consider the other scheme a little further, and it is entirely possible we will adopt it later.

Reimburse Foremen

Will Experiment This Season.

From Iowa Manufacturers: We have never tried a system such as suggested in *The Iron Age*, but it seems to us that it is worth a trial, and during the coming season it is our intention to make some attempt in that direction. While we will hardly look for the best results immediately, yet we think it will not be a failure.

Reward Suggestions.

From a New York State Manufacturer: We have no regular scheduled programme along the lines you intimate. It has always been our policy, however, to encourage employees (more particularly the heads of the departments) to bring forth new ideas or suggestions, and while, as stated above, no set price has been made, whenever a man has made a suggestion which would be beneficial to the company we have recognized it in some substantial way, so that the impression prevails that any man who makes good suggestions will receive proper recognition.

Suggestions, but No System.

From a Pennsylvania Plant: Suggestions are naturally being made to us through our superintendents from time to time. In some cases these have been useful, but no system has been established with a view to soliciting such advice from employees generally.

Have Tried Plan in a Small Way.

From a New Hampshire Factory: We have tried this system, but only in a small way, and have not succeeded in making it work very satisfactorily. Theoretically we believe in the policy, and we hope at some time to make it a success.

Encourage Suggestions by all Means.

From a Manufacturer in Indiana: We have never had a system of offering prizes to our workmen for suggestions, but have given good cash value for suggestions that have been made and have been used, and since reading the article in *The Iron Age* on this subject we think that it is well to have an understanding with workmen on this point and to encourage them to make suggestions, which, if accepted, would be well paid for. The matter seems to us to be one of deepest interest and should work to advantage to both manufacturer and those working with him.

No Definite Method of Reward.

From Connecticut Manufacturers: We are constantly receiving suggestions from our employees, some of which are valuable, and it is generally understood that proper recognition will be made of it, but there is no definite method of reward.

Think Well of the Plan.

From Ohio Manufacturers: We have never put up a box where suggestions could be deposited, or carried the system to an extent that some factories have, yet we encourage suggestions and reward all employees who make suggestions that are beneficial to the company. We believe, however, that the plan outlined in articles in *The Iron Age* is a better plan than the one which we have been using, and think very favorably of adopting the same with some modifications.

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HENRY DISSTON & SONS.

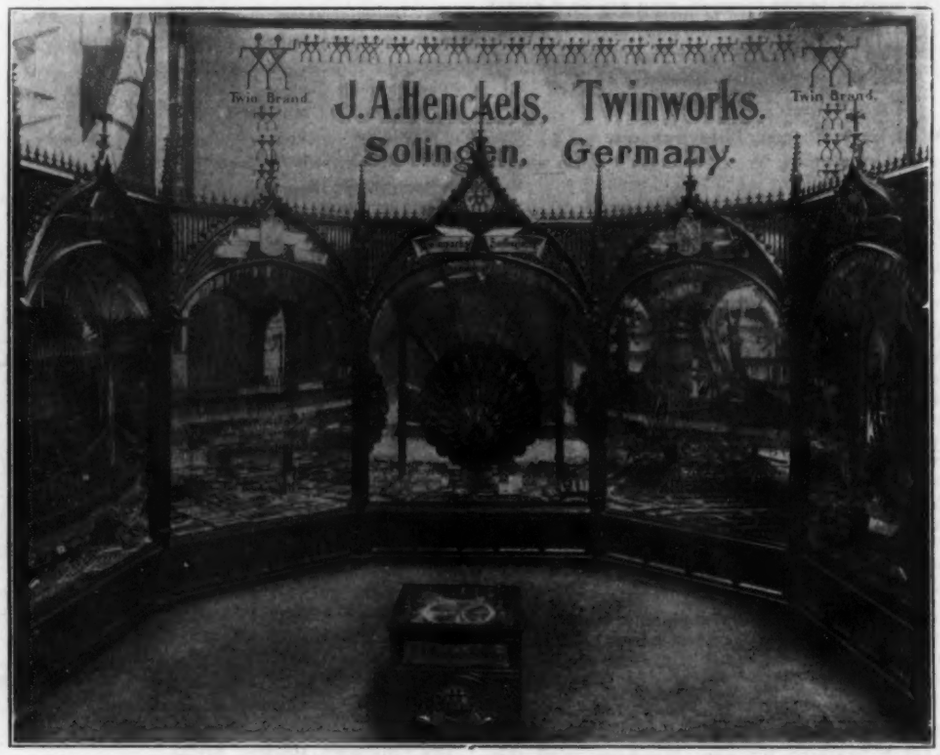
THE File trade of Philadelphia has been the center of considerable interest during the past few weeks, visits having been made to the various works by representatives from nearly all the leading Hardware firms in the country. At the Henry Disston & Sons File Company we find that they are doing a larger business than at any previous time, turning out an average of 2250 dozen per week, and are increasing their capacity, which, by the end of the year, will enable them to produce over 3000 dozen per week. Inquiring more particularly into details, the attention of our representative was directed to the extraordinary variety of Files manufactured. This arises partly from the fact that they are large users of Files in their own works, and of a class that are adapted to their own special requirements, and are not used elsewhere. In this department they are installing new extra machinery and are already making additions to the present group of buildings composing the File shop, which is necessitated by the demand for the Disston Files.

A circular File 18 inches in diameter, 1½ inches thick, weighing 115 pounds, was made by them recently. Owing to the shape and thickness, the making of this File required exceptional facilities and skill in the cutting, and particularly in hardening and tempering. This is the second File of the kind made by the company. They are also doing some special work in their Saw department, among which may be mentioned the production of four Band Saws, each 59 3-12 feet long, 17 inches wide and 13 gauge, two right and two left hand, these being the largest Band Saws ever made. Four ingots were required; each weighed 430 pounds, and were made in the Disston steel works. From these ingots the blades were rolled, and when trimmed each blade weighed 379¾ pounds in the rough, making a total of 1519 pounds for the four. They were then transferred to the Saw department, and, even considering the enormous weight, every process in the art of Saw making was accomplished with ease. In the grinding of these Saws 14-inch wide stones were placed in a double stone machine, which, we understand, is the first time that two grindstones of this width were ever required for use on one Saw in a double stone machine. The weight of each finished Saw is 275 pounds, and all four are for use in a lumber mill in the State of Washington. From this it will be seen that the waste between the weight of ingot and that of the finished Saw is so great it makes the Saws somewhat expensive.

The number of hands employed at the Disston Works is about 3250 all told, and it is the expectation of the company to complete by the end of the year an all around increase of at least one-third to their entire capacity as compared with 1903. This will include power, steel making and general equipment throughout the entire plant.

J. A. HENCKELS' ST. LOUIS EXHIBIT.

ONE of the most artistic displays at the Louisiana Purchase Exposition in St. Louis is the exhibit of J. A. Henckels, Solingen, Germany, manufacturers of "The Twins" brand of Cutlery in all its multitudinous branches, from Pocket Knives and Scissors to Swords and Poniards. With slight regard to cost in money or labor this company, whose trade-mark was granted in 1731, has manufactured for this World's Fair some of the finest and costliest Cutlery show pieces ever produced. The goods are arranged in handsome show cases of dark red wood (Paduk or South African vermilion), carved and finished in Gothic style especially for this occasion. The center panel or case contains an aggregate of about 5000 pairs of Scissors, artistically arranged, the centerpiece, a life size peacock figure, requiring 2500 pairs. In an upright case by itself is what is said to be the largest pair of Scissors ever made, 7 feet long, and weighing 200 pounds. It is made of the finest steel, with handles of solid gold bronze, elaborately ornamented and finished in Gothic style, as perfect in proportion and detail as the best commercial article, and is valued at $3000. Another case contains thousands of Pocket Knives of different styles, from the single blade "jack" to the finest combination Knife, with 100 blades and other conveniences, all grouped around two extra large show Knives, one of which is valued at $2000 and the other at $3000. The former of the two has beautifully carved ivory handles and the other exquisitely enameled handles set with precious stones. In another case are Razors of all dimensions, handled with ivory, tortoise shell, pearl, etc. Still another case contains Carvers, Table Knives and Forks, Dessert Knives and Forks, Oyster Forks and everything pertaining to this line, with handles of pearl, ivory, porcelain, amber, buffalo horn and other coverings. The sole agents in the United States and Canada for these goods are Graef & Schmidt, 107 Chambers street, New York.



J. A. Henckels' Exhibit at St. Louis.

BRITISH LETTER.

Offices of The Iron Age, HASTINGS HOUSE, NORFOLK ST., LONDON, W. C., September 17, 1904.

The Week's Hardware Trade.

WITH the approach of the end of the quarter there is some slackening of orders, particularly from India and the Colonies, but the shipping departments are not dissatisfied with the present situation. A considerable amount of merchandise is being dispatched to Australia, New Zealand and India, and there is unmistakably more vitality in the South African trade. On home account there is not much to boast of. Employment, which affords a fairly accurate test of the commercial situation in the various departments of the Hardware, Cutlery and metal trades, may be thus stated:

Brass Work, Bedstead Making, &c.—Employment continues bad in the brass trade generally; it is worse than a month ago, and there is much short time.

Nuts, Bolts, Nails, &c.—On Nuts and Bolts employment is reported fair in the Wolverhampton district, moderate in Birmingham and Smethwick, slack in South Wales. In Birmingham employment is moderate with makers of Wire and Cut Nails, quiet with makers of Machine Made Rivets. In the Blackheath district it is bad with makers of Wrought Nails and Rivets.

Tubes.—In South Staffordshire employment is reported as slightly better than a month ago, but worse than a year ago. In Birmingham it is fairly good in the seamless brass and copper Tube trades. In South Wales employment is slack and worse than a month ago.

Chains, Anchors, Anvils, Vises, &c.—With Cable Chain makers and their strikers and with makers of Chains at Cradley employment has declined and is moderate to slack. On the North-east Coast it is fairly good on large Chains, but slack on small work. With anchor smiths employment is bad in the Black Country and in South Wales. Anvil and Vise makers in the Dudley district report that employment is slack, and there is some half time worked. In Birmingham and West Bromwich employment is fairly good with Spring makers, fair with Axle makers. At Wednesbury these trades report employment as bad, as also do makers of Railway Tires, Coach Axles and makers of Iron and steel forgings.

Locks, Keys and General Hardware.—In the Lock, Key and Latch trade employment continues slack, and is worse than a month and a year ago. Hollow Ware makers at Birmingham report employment as slightly improved, at West Bromwich as very quiet with some half time, at Wolverhampton as fair. At Sheffield Hollow Ware buffers and stampers are slack. At Birmingham employment is reported as fairly good with makers of Matchets and Hoes, and at Wednesbury as good with makers of Brazil and Plantation Hoes. In the Wolverhampton district employment is fair with Iron Hurdle and Fence makers and Tank makers; quiet with makers of Spades and Forks at Stourbridge; bad with electrical and Cycle castings at Oakengates.

Files, Edge Tools, &c.—File smiths report employment as fair in the Wolverhampton district, File cutters as slack in Birmingham. At Sheffield hand forgers of Files report employment as moderate, other branches as slack. Edge Tool makers are slack both in Birmingham and Sheffield.

Cutlery, &c.—In Sheffield employment is reported as slack, except with Sheep Shear makers, who report it as fair. The Needle makers at Redditch report employment as quiet, the Fish Hook makers as good. Machine Needle makers at Leicester and Nottingham report trade as slack.

Sheet Metal, &c.—In London zinc workers report employment as fair, other branches as bad. In Manchester, Exeter, Edinburgh and Dundee employment has been fair; at Aberdeen it has been good, at Birmingham it has been moderate on tin plate work, quiet on iron plate. In other centers employment generally is described as quiet or bad.

Wire Work.—Wire drawers and workers in Glasgow report employment as fairly good; wire drawers in Warrington as slightly better; wire drawers in London as fairly good, workers as bad. Wire drawers in Manchester are slack and have a large percentage on short time.

Cheaper Cycles.

Some months ago I announced in these columns that the standard Cycles for next season would be at the price of 8 guineas. At the present time it is 10 guineas, having been reduced to that figure three years ago, when it stood at 12 guineas. In conversation with the London manager of one of the largest firms of the country as to the effect upon the market of the 8 guinea machine, he said that the 8 guinea machine, though a standard machine, would not be so good as the 10 guinea machine. Makers were disgusted when they heard the price was cut to that figure. An absolutely new plant will be necessary at the various works, as the present plant will not do. But it will be a standard machine at 8 guineas, and will, of course, bear the maker's name. A 10 or 12 guinea machine is the cheaper in the long run. The makers will have a very small profit on the 8 guineas; it is not large on the 10. It is the 14 or 16 guinea machines that pay the maker. These 8 guinea machines will ruin cycling for several reasons. All the better class people will be disgusted with it. That is the case in America, and the cheap machine brought it about there. All the smaller men will be driven out of the trade. They will not be able to stand the severe competition; they will not be able, in the first place, to put down the new plant to build these new 8 guinea machines. The whole Cycle trade will eventually center in a few big firms—three or four—as it has done in America—as the Sewing Machine and Typewriter businesses are.

Views similar to these were expressed by another gentleman in the trade, though he asserted there would not be a marked difference between the 8 and 10 guinea standards: "It is the accessories alone almost that will suffer," he said.

Pushing Trade with Canada.

I am told from a Canadian source that the suggestion of Mr. Bell, the Birmingham agent of the Canadian Government, that Canadian shippers and manufacturers should cross the Atlantic and make a sedulous study of the British markets, has evoked much sympathy in the Dominion, and has led to the suggestion that this is a matter in which the Canadian Manufacturers' Association might well take action. There has been of late a growing inclination on the part of Canadian commercialists and industrialists to spend their holiday in these islands, but this is held to be a matter which may well have behind it a disciplined authority; and it is advised that the Manufacturers' Association should see that the visit to England is not a mere holiday excursion, but is undertaken with a business intent.

Invoice Charges in Australia.

Not only is there a strenuous and constant effort being made to cultivate trade between Great Britain and Canada, but the Canadians are equally strenuous in pushing trade with Australia. The Melbourne Canadian agent has been giving some useful hints as to the proper methods of shipment and the necessity of careful invoicing. This advice is of equal importance to American shippers. "The f.o.b. price," he explains, "is understood here as relating to the price on board steamer at port of shipment. Therefore, while the Australian customs do not exact duty on the inland freight charges to port of shipment or upon the cost of casing, it is yet necessary to show these items upon the invoices." As an example he submits the following:

Cost of Piano at Toronto	$150.00
Casing	5.00
Freight from Toronto to New York	10.00
F.o.b. price New York	$165.00

It will thus be seen that while the manufacturer's price is $165, f.o.b. New York, the Australian customs duty is calculated upon $150, the cost at Toronto, but should the items of inland freight and packing be omitted from the invoice, then customs duty has to be paid upon the total amount of the invoice. *Bona fide* trade discounts are also deducted from the value of each line before computing the value for duty. In every instance these invoices should be "certified correct" and signed by the manufacturer. It is also pointed out that in invoicing from a c.i.f. basis it is necessary, in order to comply with the customs regulations, to state upon the invoice the actual cost at factory point, packing, inland freight to port of shipment, marine freight to destination and marine insurance charges in addition, of course, to trade discounts. An example is:

Twelve Brantford wagons at $125	$1,500.00
Cost of packages	50.00
Railway freight to New York	50.00
Marine freight, New York to Melbourne	150.00
Marine insurance (say on $2,000)	20.00
Total cost, c.i.f. Melbourne	$1,770.00

In this case the duty would be payable upon $1500, being the value of the Vehicles at factory, whereas if the other items (as above) were not shown on the invoice, the customs duty would be calculated upon $1770, which is the c.i.f. cost landed at Melbourne, involving in the case of a 10 per cent. duty an extra payment of $27.

MELCHIOR, ARMSTRONG & DESSAU.

MELCHIOR, ARMSTRONG & DESSAU, 116 Broad street, New York, general commisison merchants and exporters, have issued a revised edition of their illustrated descriptive catalogue for foreign distribution. It contains 166 pages, each 13¼ x 10¼ inches, showing selected lines of Hardware, Tools, &c., suited to the markets with which they trade, each manufacturer's name being given with the goods. The descriptions are in English, French, German and Spanish. Section A of 43 pages contains the additions since the original issue last year. The trade of this house (which was established 149 years ago, the main office being in Copenhagen) is mainly in Germany, the Scandinavian countries, Russia and the West Indies. They carry stocks of goods in Moscow, St. Petersburg, Copenhagen and Berlin, having branch houses also in Warsaw, Odessa, Stockholm, Helsingfors (Finland), Ponce (Porto Rico) and St. Croix (Danish West Indies). The Copenhagen house is in charge of G. Melchior, that at Ponce is under the supervision of Carlos Armstrong, and the New York branch is directed by D. Dessau, assisted by V. V. Lebedjeff, business manager.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS *for catalogues, price-lists, quotations, &c., have been received from the following houses and are referred to manufacturers:*

FROM TODD & VAUGHAN, Clifty, Ark., who are successors to Goddard & Vaughan in the Hardware, Stove, Agricultural Implement and Paint business.

FROM TALLY & DUNHAM HARDWARE COMPANY, Clinton, O. T., which has succeeded Cotty & Payne Hardware Company.

FROM J. E. VANDIVER & Co., Milford, Mo., who are successors to W. W. Fink in the Hardware, Stove, Implement, Paint and Sporting Goods business.

FROM AZTEC HARDWARE & LUMBER COMPANY, Aztec, N. M., which has succeeded McCoy & Rothein, at the old stand.

FROM FOSTER HARDWARE COMPANY, Danville, Ind., which has succeeded Higgins & Christie in the Hardware, Stove, Farm Implement, Paint and Sporting Goods business.

FROM GEO. W. KIMBALL, Holton, Kan., who has recently embarked in business as dealer in Shelf and Heavy Hardware, Implements, Paints and Oils, Sporting Goods, &c.

FROM E. S. D. VOORHEES, Greenwood, Neb., who has succeeded Fred. Voorhees & Co., in the Hardware, Stove, Implement, Sporting Goods and Furniture business.

FROM SODEMANN HARDWARE COMPANY, Concordia, Mo., successor to William Sodemann in Shelf Hardware, Stoves and Tinware, Sporting Goods, Furnaces, &c. The members of the firm are Louis J. Edgar and W. C. Sodemann, the latter son of William Sodemann. The store has been remodeled and a two-story addition built.

FROM HARRELL HARDWARE COMPANY, Spokogee, I. T., which has commenced the retail business in Shelf and Heavy Hardware, Stoves, Agricultural Implements, Paints, &c.

FROM JOHNSON-MANDEVILLE COMPANY, 496 Broad street, Newark, N. J., which has been incorporated with a capital of $50,000, by Walter T. Johnson, John D. Mandeville, Florence M. Johnson and Albert C. Mandeville. The company is successor to Walter T. Johnson & Co. in the wholesale and retail business in general Hardware and Factory Supplies.

FROM L. S. HOUSTEAD, Silver City, Idaho, who has succeeded N. C. Larsen in the Hardware, Stove, Sporting Goods and Mining Supply business.

FROM E. B. PARRISH, Nevada, Mo., whose store and Hardware stock were badly damaged by fire on the 6th inst.

FROM H. L. WITHEROW, Homer City, Pa., who has recently begun the Heavy and Shelf Hardware and Agricultural Implement business.

FROM BLAKENEY-BROOKS HARDWARE COMPANY, Paris, Texas, which has increased its capital stock from $50,000 to $100,000. The company handles General Hardware and Mill Supplies at wholesale exclusively.

FROM J. R. MURROW, Waynoka, O. T., who has succeeded Murrow & Ralph in the general Hardware and Implement business.

FROM LIERLEY & THORNTON, Clarksdale, Mo., who are successors to David Lierley in the Hardware business.

FROM H. J. GELZER, Wauseon, Ohio, who has bought the general Hardware, Stove and Implement business of Frank Reynolds.

MISCELLANEOUS NOTES.

Improved Horse-Radish Grater.

Schroeter Brothers Hardware Company, 809-811 North Fourth street, St. Louis, Mo., is manufacturing its horse-radish grater in an improved form. In addition the machine can be successfully used for grating cocoanut, bread, potatoes, and chocolate. The grater is constructed so that the grating drum can be removed to allow thorough cleaning in a short time. The process of grating is rapid, a stalk of horse-radish being grated in a minute and a half. The machine weighs 12¼ pounds, and, boxed for shipment, 15 pounds. The improvements include the construction of the grating drum and the clamping device for holding the machine to a table.

Diamond Expansion Shield Uses.

The Diamond expansion shield, made by the New Jersey Foundry & Machine Company, 9-15 Murray street, New York, is suitable for the use of telephone and telegraph companies, electric light and power companies, miners, railroad companies and others having occasion to fasten trolley and feed wires to brick or stone buildings, the roof or wall of mines or tunnels, and also for attaching electric wires to brick, stone, concrete, or other masonry. If desired, a pin with standard insulator threads can be cast on the bolt, making it unnecessary to use wooden pins, or the bolt can be made for inserting into the wooden pin. The shield can be used to excellent advantage, we are informed, in place of wooden plugs, sulphur, lead, wedge bolts, &c. The shields are made of metal, threaded on the inside to receive the screw, thicker at the outer end to expand as the screw is run in, and a roughened outer surface to grip the sides of the hole. When properly set they will not work loose and cannot be pulled out except by actually breaking the material from around them, but at the same time they may be removed by simply unscrewing the bolt. The operation of the Diamond expansion shield is very simple: a hole is drilled, the shield is inserted and the screw run in. The shield insures a positive hold in any solid material, and the greater the strain on the bolt the more the shields

grip the sides of the hole. The shields are made in sizes from ⅛ to 2 inch diameter screw.

Tool Chests and Tool Cabinets.

C. E. Jennings & Co., 42 Murray street, New York, have supplemented their lines of tool chests and tool cabinets by the following additions, which are intended to satisfy a demand for a good article at a more moderate cost that the larger chests and cabinets. The O1 machinist chest, without tools, is made of selected chestnut, with Yale patented lock, nickeled draw pulls, brass elbow to support lid, with a patented device to lock all drawers at once automatically. At each side for carrying purposes are drop handles. The new tool cabinets, equipped with warranted tools for practical purposes, are Nos. 99 and 99½. Both cabinets are 22 x 14 x 5½ inches, made of chestnut and hang against the wall. The former contains 14 tools and No. 99½ has 21 tools. Both of the cabinets are admirably suited for holiday trade or a house kit for all around work.

Dixie Metallic Shingles.

The Wheeling Corrugating Company, Wheeling, W. Va., and 47-51 Cliff street, New York, is manufacturing the Dixie metallic shingles for roofing and siding, of durable and ornamental character. They are designed largely for mansard, Gothic, Queen Anne and other styles of roofs having a quarter pitch. The company has brought these out to meet a demand for a substitute for slate or terra cotta on steep roofs. The tin shingles are made of best quality full weight Worcester grade roofing plates, carefully painted on both sides with the best iron ore paint mixed with pure linseed oil, in color dark red. The galvanized shingles, it is observed, are galvanized after being formed, thereby leaving no raw edges. If so ordered they can be made of copper sheets or any grade of redipped plates. The sizes are 7 x 10, 10 x 14 and 14 x 20, weighing in tin per square 90, 85 and 80 pounds, respectively, the galvanized shingles weighing about 5 pounds more each per square.

Two New Winchester Single Shot Rifles.

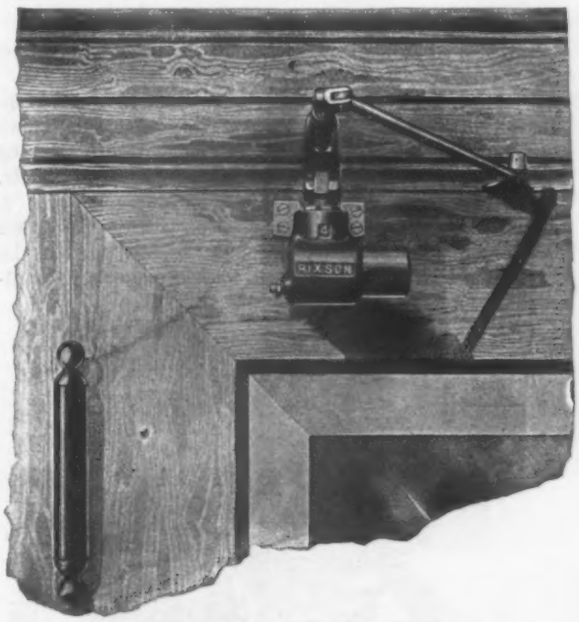
The Winchester Repeating Arms Company, New Haven, Conn., and 312 Broadway, New York, has just put on the market two new .22 caliber single shot rifles, which will be known as the Thumb Trigger Model and the Model 1904 Single Shot. The former is a decided novelty. As its name indicates, the trigger, which is located on the upper side of the grip at the rear of the bolt, is operated by pressing down with the thumb. It is asserted by the company that this style of trigger is an aid to accurate shooting, as the marksman is not so apt to throw the gun off the object aimed at in pressing down the trigger as when pulling it in the old way. This rifle weighs about 3 pounds, and lists at $3.50. The Model 1904 Single Shot represents, they say, the greatest value in a gun they have ever offered. It has a 21-inch heavy round barrel, a highly finished Schuetzen shaped butt stock 13¼ inches long, with a blue steel rifle butt plate. The length of this gun over all is 37½ inches, and its weight is about 4 pounds. It lists at $6. Notwithstanding the low price at which both these rifles are offered, the company refers to them as made with the same degree of care and science characterizing the manufacture of all Winchester rifles. Both guns are made in take down style and have the same simple and reliable bolt action which has been found so satisfactory in their Winchester Model 1902. The Thumb Trigger and 1904 models will be regularly packed for the trade ten guns in a case.

Fig. 1.—Thumb Trigger Winchester Rifle.

Fig. 2.—Model 1904 Single Shot Winchester Rifle.

Rixson Double Acting Door Check.

The accompanying cut represents a liquid check equipped with two independent valves, by means of which a heavy check may be had in one direction, while the opposite movement may be checked very lightly. The arm is so constructed that it altomatically drops under the jamb head when the door is opened in one direction, and *vice versa* automatically rises and passes over the top of the door when the door opens in the opposite direction. No cutting of the door is necessary, as the entire check, including the arm, is attached to the side of the door, on either inside or outside of left hand or right hand door, as desired. The check retards the closing of the door very gently, bringing it to a full stop on the center. It is advocated as a means for preventing accidents which are sometimes caused by swinging doors to persons passing through, and also for preventing the ingress of cold and dust which are given entrance by the oscillation of a door without such a check. The main shaft or spindle is a steel drop forging, the driving arm or link is made of steel, and the chamber containing the fluid is a seamless steel tube which, it is remarked, cannot leak. The check is made by the Oscar C. Rixson Company, 111-113 West Harrison street, Chicago.



Rixson Double Acting Door Check.

Perfect Handle Machinists' Screw Driver.

The H. D. Smith & Co., Plantsville, Conn., has enlarged its line of perfect handle screw drivers by the addition of one for heavy service, shown in the accompanying illustrations. In Fig. 1 front and side views are given, the latter and lower of the two cuts showing the blade between the two halves of the wooden handle. The square shank permits the use of a wrench, Fig. 2, for tightening or loosening cap screws, set screws, &c. The maker remarks that the operator can put all the power he wishes on the wrench, as the maker's unqualified guarantee is back of the screw drivers. These goods are made in two sizes, length over all 9½ and 10½ inches, with 4½ and 5½ inch blades, 7-16 and 9-16 inch squares, and ½ and ¾ inch wide at point, respectively. The goods are packed one-half dozen in a slide cover wooden box, six dozen in a case.

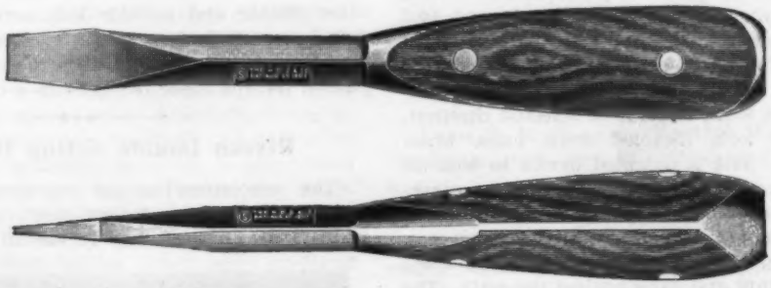


Fig. 1.—Perfect Handle Machinists' Screw Driver.

Fig. 2.—Using Screw Driver with Wrench.

Perfection Key Hole Saw.

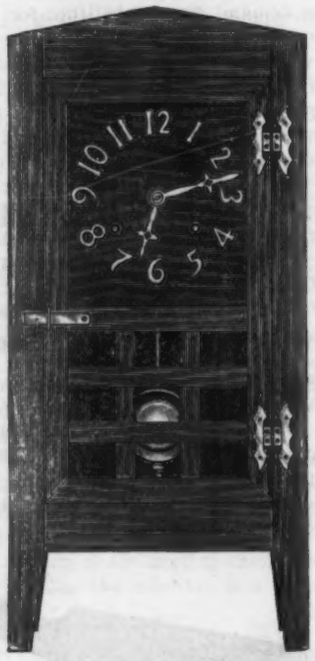
The Tower & Lyon Company, 95 Chambers street, New York, has recently put on the market the Perfection key hole saw, Converse patent, as here illustrated.

Perfection Key Hole Saw.

These saw blades are both set and tempered, and in the opinion of the manufacturer, this tool is a great improvement on their Handy key hole saw, although the Perfection can be sold at a much lower price. The handle, of cast metal, is 4⅛ inches long and japan finished, the blade being secured by a spring tempered steel key pin so formed that a quarter turn of the looped end eccentrically clamps it immovably in place and at any desired length of saw. The blade can be instantly released to insert a new one, or lengthened or shortened at will, according to requirement of the user. If it is desired to carry in the pocket, the point of saw can be reversed and a portion of the blade recessed in handle to shorten it. The goods are packed 12 in a box, and priced by the gross.

Mantel Mission Clocks.

The accompanying cut illustrates one of the designs of mantel mission clocks originated by the New Haven Clock Company, New Haven, Conn. The design is known as the "San Mateo." It is 20½ inches high, 9½ inches wide, while the dial is 6 inches in diameter. The case is made of heavy antique oak, in dull finish, carefully and substantially built. It is fitted with a durable eight-day American movement, that is guaranteed to keep good time, and strikes the hour and half hour on a sweet toned cathedral gong. The figures and hands are of brass finish, polished, on a dark oak dial to match the case. The latch and hinges are of old fashioned design in gun metal. The maker remarks that the simple, pure Spanish mission style lines, together with the reasonable price, make the clock a desirable article for the hardware trade to handle, especially during the holiday season which is approaching. The company also makes the Tattoo Intermittent alarm clock, of which it is sole manufacturer.



Mantel Mission Clock.

The Barton Parish Iceless Refrigerator.

We illustrate herewith an iceless refrigerator. The device consists of a partitioned sheet steel box or car hung on a wire cable by means of which it can be lowered into a well and raised at will. The well curb is covered by means of a gate or trap door, which rises

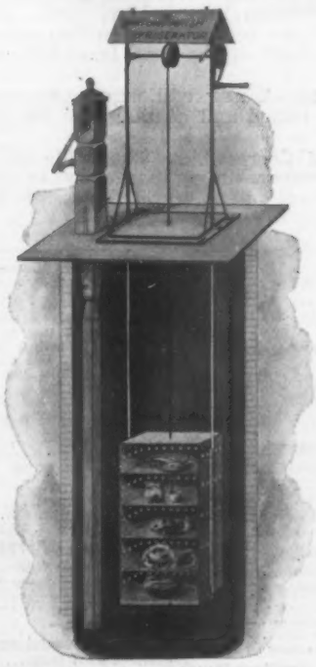


Fig. 1.—The Barton Parish Iceless Refrigerator.

when the box is raised and sinks into its proper position when the box is lowered, so that the use of the device does not in any way leave the top of the well unprotected. The car or box is 21 inches wide, 13 inches deep and 42 inches high in the standard No. 1 size and contains 9½ square feet of shelf room and 6½ cubic feet of space. The frame in which this car slides is made of steel tubing rigidly braced. The gear for raising and lowering the car, Fig. 2, consists of two sprocket wheels and a chain, very much the same as is used on a bicycle, the crank being attached to the smaller sprocket. A

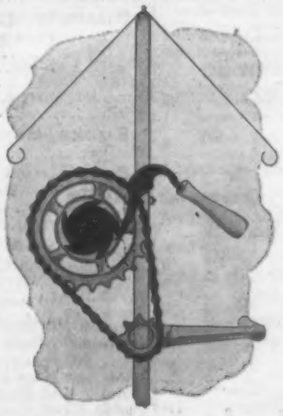
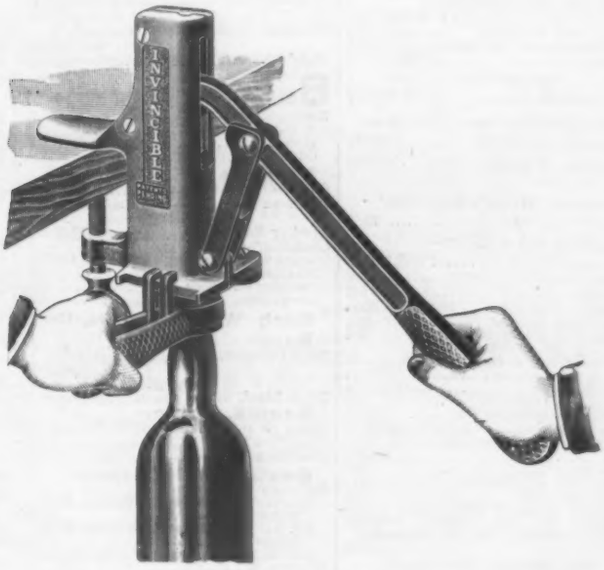


Fig. 2.—Gear for Iceless Refrigerator.

ratchet and pawl arrangement permits the locking of the car in any position. The refrigerator is, of course, intended primarily for farms and country residences where wells are used, although it is also stated that a hole may be dug in the cellar immediately under the kitchen floor, walled up to the floor, and a hoisting device installed in the kitchen or pantry. It is held by the manufacturers that almost as good results are obtained with such a dry hole as with a well. The company emphasizes the fact that the first cost of the refrigerator is the only cost. This device is being manufactured and sold by the Barton Parish Refrigerator Company, Danville, Ill.

Invincible Cork Puller.

Hugo Reisinger, Bowling Green Building, 9-15 Broadway, New York, has recently put on the market the Invincible cork puller, here illustrated. The puller is compact, of neat and attractive appearance and simple, durable construction. It is entirely nickeled with the exception of the self-centering safety bottle grip handles, which are japanned. The handle is 10 inches long, the body being 6 inches high. The handle rests below table, shelf or bar to which the puller is clamped. No springs are used and the handle drops out of the way after use. The operator incurs no risk from broken bottles, as the rubber cushioned grips are so made as to automatically self center the cork under the worm screw. The puller can be easily adjusted so that a long cork will be drawn entirely out, although a valuable feature of it is that by a turn of a screw the cork can be so drawn as to leave a small portion of it still in neck of bottle, which can be readily removed by hand. With many beverages, especially those of costly character, this serves the double purpose of preserving the contents until actually needed, at the same time indicating the originality and freshness of the package. The manufacturer dwells on the impossibility of error, as is often occasioned by a withdrawn



Invincible Cork Puller.

cork accidentally left in the machine, which, if undiscovered in the rush of business, is liable to drive the cork of a fresh bottle in, frequently breaking the bottle. This puller withdraws the cork quickly and easily and strips the cork from the worm screw in a single movement of the lever handle, without removing the bottle from mouth of puller. The same manufacturer makes the Invincible bottle corker, which has already been illustrated in these columns.

Scott Hardware Company, Paducah, Ky., is just taking possession of the new store erected in the place of the one destroyed by fire on July 4. A number of improvements have been introduced in the new establishment, making it especially convenient and attractive. The building is not a very large one, but is arranged compactly and to the best advantage. It is four stories high, 26 feet wide and 150 feet deep. The ground floor is devoted to the retail department, and the second accommodates stock of Stoves, Ranges and House Furnishing Goods. The third and fourth floors are used by the wholesale department and for duplicate stock. The company has a two-story warehouse, 58 x 175 feet, in which heavy and bulky goods, such as Nails, Bar Iron, Horseshoes, &c., which do not look well in a well kept Hardware store, are carried. The new building has two capacious show windows, which are utilized to good advantage by the company in making striking and trade-winning displays.

Current Hardware Prices.

REVISED SEPTEMBER 27, 1904

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ₩ doz. $3.00.....33⅓%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....₩ lb 7¼@7¾c
Hay-Budden, Wrought.....9@9¼c
Horseshoe brand, Wrought.....9@9¼c
Trenton.....₩ lb 9@9¼c

Imported—
Peter Wright & Sons.....₩ lb 10¼c

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....75@75&5%
Boring Machine Augers....66⅔@70%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern ... 50&10&5@60%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list.....25%
No. 30, R. Jennings' List.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers' Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60&10%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26.....50&10%
Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
Ford's, Clark's Pattern.....50&10@6 %
C. E. Jennings & Co., Steer's Pat.....25%
Swan's.....60%

Gimlet Bits—
Common Double Cut..gro. $3.00@3.25
German Pattern.....gro. $4.50@4.75

Hollow Augers—
Bonney Pattern, per doz. $10.00@11.00
Ames.....25&10%
New Patent.....25&10%
Universal.....30%
Wood's Universal.....25%

Ship Augers and Bits—
Ford's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15%
Watrous'.....35&5%
Ohio Tool Co.'s.....40%
Snell's.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—
Brad Awls:
Handled.....gro. $2.75@3.00
Unhandled, Shouldered.gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00
Hurwood.....40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights (up to 3½ lb.)
First Quality.....$6.50
Second Quality.....$5.75
NOTE.—Heavier Weights add Extras as per regular schedule.

Axle Grease—See *Grease, Axle*

Axles—
Iron or Steel
Concord, Loose Collar.....4@4¼c
Concord, Solid Collar.....4¼@5c
No. 1 Common.....3¼@3¾c
No. 1¼ Com. New Style.....3¾@4¼c
No. 2 Solid Collar.....4¼@5c
Nos. 7, 8, 11 and 12.....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18.....67&10@60&10&10%
Nos. 19 to 22.....70&10@75%

Boxes, Axle—
Common and Concord, not turned..
lb. 4¼@4¼c
Common and Concord, turned.....
lb. 5@5¼c
Half Patent.....lb. 9@9½c

Bait—Fishing—
Hendryx:
A Bait.....30%
B Bait.....35%
Competitor Bait.....20&5%

Balances—Sash—
Caldwell new list.....50%
Pullman.....50&10@60%

Spring—
Spring Balances.....60@60&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—
Steel Crowbars, 10 to 50 lb., per lb..
2¾@3¼c

Towel—
No. 10 Ideal, Nickel Plate.....₩ gro, $8.50

Beams, Scale—
Scale Beams, List Jan. 12, '82.40&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₩ doz $0.85; Tinned.....$1.00
No. 11 Wire Coppered ₩ doz. $1.10; Tinned.....$1.30
No. 10 Wire Galvanized....₩ doz. $1.75
Western W. G. Co.
No. 1 Electric.....₩ gro. $7.80
No. 2 Buffalo.....₩ gro. $9.00
No. 3 Perfection Dust.....₩ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned.....₩ doz. $1.20
Holt, No 1, Tinned.....₩ doz. $1.50
Holt, No. B, Japanned.....₩ doz. $2.00
Holt, No. 2, Tinned.....₩ doz. $2.25
Lyon, No 2, Japanned.....₩ doz. $1.25
Lyon, No. 3, Japanned.....₩ doz. $1.50
Taplin Mfg. Co.:₩ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd....$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd..$17.00
No. 200 Imp'd Dover Tumbler.....$8.50
No. 202, Imp'd Dover Tumbler, Tin'd. $9.50
No. 300, Imp'd Dover Mammoth, ₩ doz.....$25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (S. S. & Co.)....₩ gro. net, $6.00

Bellows—
Blacksmith, Standard List..75@75&5%

Blacksmiths'—
Net Prices.

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each..	*$3.25*	*3.50*	*4.00*	*4.50*	*5.00*	*5.75*

Extra Length:
Each..$3.75 4.25 4.75 5.25 6.00 7.00

Molders—
Net Prices.

Inch.....	10	12	14
Doz.....	$8.50	10.00	13.00

Hand—
Net Prices.

Inch.....	6	7	8	9	10
Doz.....	$4.25	4.50	5.00	6.50	7.75

Bells—Cow—
Ordinary goods.....75&5@75&10%
High grade.....70&10@70&10&5%
Jersey.....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Eureka Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished, Brass.....
60&5@60&10&5%
White Metal.....60%
Nickel Plated.....50&10@50&10&5%
Swiss.....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 2¼
Steel Alloy Church and School.....
50&10&5@60&5%
American Tube & Stamp'g Co. Gongs..75%
Table Call Bells.....50@50&10%

Belting—Rubber—
Agricultural (Low Grade)..75@75&5%
Common Standard.....70@70&10%
Standard.....65@70%
Extra.....60&5@60&10%
High Grade.....59&5@50&10%

Leather—
Extra Heavy, Short Lap....60@60&5%
Regular Short Lap 60&10@60&10&10%
Standard.....70@70&5%
Light Standard.....70&10%
Cut Leather Lacing.....60&10%
Leather Lacing Sides, per sq. ft..18c

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters.....20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

Bicycle Goods—
John S. Long's Son's 1902 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—
Common Wooden.....70&10@75&5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
Stowell's Self Loading.....60%
See also *Machines, Hoisting.*

Boards, Stove—
Zinc, Crystal, &c.....30&10@40&10%

Boards, Wash—
See *Washboards.*

Bolts—Carriage, Machine, &c.—
Common Carriage:
⅝ x 6 and Smaller.....75&10@80%
Larger sizes.....75@75&10%
Phila. Eagle, $3.00 list May 24, '99....
80 &10%
Bolt Ends, list Feb. 14, '95.....75@....%
Machine.....75&5@75&10&5%
Machine with C. & T. Nuts.....
70&5@....%

Door and Shutter—
Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*1.05*	*1.30*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.57*	*.80*	*1.00*

Wrt Barrel, Jap'd..75&10@75&10&10%
Wrt " Bronzed..50&10@50&10&10%
Wrought Spring..70&10@70&10&10%
Wrt. Shutter...50&10@50&10&10&5%
Wrt. Square Neck..70&10@70&10&10%
Wrt. Square..66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Stove and Plow—
Plow.....65&10@....%
Stove.....30&5@30&10&5%

Tire—
Common.....78½%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....82½%
Bay State, list Dec. 28, '99.....72½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84.....82½%
Eclipse, list Dec. 28, '99.....72½%
Russell, Burdsall & Ward Bolt & Nut Co.
Empire, list Dec. 28, '99.....72½%
Norway Phila., list Oct. '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1¼*	*1¾*	*2*
Per doz..	*$4.30*	*5.00*	*5.75*	*7.25*
Inch.....			*2¼*	*2½*
Per Doz.....			*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon.....15&10%
Perfection.....₩ doz. $30.00
Schatz.....40%

Braces—
Common Ball, American..$1.15@1.25
Barber's.....50&10&10@60&10%
Fray's Genuine Sporford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co. Peck's Patent60&10@65%

Brackets—
Wrought Steel.....80@10@....%
Bradley's Wire Shelf:
Full cases.....80@10&10%
Broken cases.....80@10%
Griffin's Pressed Steel.....80%
Griffin's Folding Brackets.....70@10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60@10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.

Quart.....	*10*	*12*	*14*
Water, Regular..	*1.40*	*1.70*	*1.90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom.	*2.30*	*2.55*	*2.95*
Well.....	*2.55*	....	*3.15*

Bucks, Saw—
Hoosier.....₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—
Wrought list Sept., '96.....20@30%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....70&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts.....70&5@70&10%

Wrought Steel—
Table and Back Flaps.....75%
Narrow and Broad.....75%
Inside Blind.....75&10%
Loose Pin.....75%
Loose Pin, Ball and Steeple Tip
80&20%
Japanned, Ball Tip Butts.70&10%
Bronzed Wrt. Nar. and Inside Blind Butts.....55&10%
Extra 10@10&10%

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—
Blunt, 1 prong.....per lb. 4@4½c
Sharp, 1 prong.....per lb. 4½@4¾c
Gautier, Blunt.....4@4½c
Gautier, Sharp.....4½@4¾c
Perkins', Blunt Toe.....₩ lb 3.65c
Perkins', Sharp Toe.....₩ lb 4.15c

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1.35	1.85	2.05	each.
New York Pat'rn	1.50	2.20	2.45	each.
Baltimore Pat'rn	1.50	2.20	2.45	each.
Dubuque	1.35	1.60	1.75	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	129.60 gro., net

Caps—Percussion—

Eley's E. B. ..... 52@55c
G. D ..... *per M* $4@$5c
F. L. ..... *per M* 40@42c
G. E. ..... *per M* $48@50c
Musket ..... *per M* 62@63c

Primers—

Berdan Primers, $2.00 per M ..... 20&5%
B. L Caps (Sturtevant Shells) $2.00 per M 20%
All other primers per M. $1.55@$1.60

Cartridges—

Blank Cartridges:
38 C. F., $5.50 ..... 10&5%
38 C. F., $7 00 ..... 10&5%
22 cal. Rim, $1 50 ..... 10&5%
32 cal. Rim, $2.75 ..... 10&5%
B. B. Caps, Con., Ball Swgd $1 90
B. B. Caps, Round Ball $1.40
Central Fire 25%
Target and Sporting Rifle ..... 15&5%
Primed Shells and Bullets ..... 15&10%
Rim Fire Sporting 50%
Rim Fire, Military ..... 15&5%

Casters—

Bed ..... 70@70&10%
Plate ..... 60&5@60&10%
Philadelphia ..... 75@75&5%
Acme, Ball Bearing 33⅓%
Boss ..... 70&10%
Boss Anti-Friction ..... 70&10%
Gem (Roller Bearing) 80%
Martin's Patent (Phœnix) 45%
Standard Ball Bearing 45%
Tucker's Patent low list 30%
Yale (Double Wheel) low list 50%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link;						
3-16	*¼*	*5-16*	*⅜*	*7-16*	*½*	*9-16*
7.50	*5.10*	*4.15*	*3.45*	*3.30*	*3.20*	*3.15*
⅝	*¾*	*⅞*	*1 to 1¼ inch.*			
3.10	*3.00*	*2.95*	*2.95*	*per 100 lb.*		

German Coil ..... 60&10c@10&70%

Halters and Ties—

Halter Chains ..... 60c@10@60c@10c@10%
German Pattern Halter Chains, list July 2d, '97 ..... 60c&10c&10@.....%
Cow Ties ..... 60@60c@10%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring $23.50
6½—6-2, Straight, with ring $24.50
6½—8-2, Straight, with ring $28.00
6½—10-2, Straight, with ring $32.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains ..... 60 &5@60c&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron ..... 60c&10@60c@10c&5%
Brass ..... 60c@10@60c@10c@10%
Safety Chain ..... 75@75&10c&5%
Gal. Pump Chain ..... *lb* 4¼@4¾c
Covert Mfg. Co.
Breast ..... 40&2%
Halter ..... 40&2%
Heel ..... 40&2%
Rein ..... 40&2%
Stallion ..... 40&2%
Covert Sad. Works:
Breast 70%
Halter 70%
Hold Back 70%
Rein 70%
Oneida Community:
Am. C ll and Halters ..... 40@40&5%
Am. Cow Ties ..... 45@50%
Eureka Coll and Halter ..... 45@50&5%
Niagara Coll and Halters ..... 45@50&5%
Niagara Cow Ties ..... 45&5@50&10&5%
Niagara Wire Dog Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain ..... 70&10%
Universal Dbl-Jointed Chain 50%

Chalk—(From Jobbers.)

Carpenters' Blue ..... *gro.* 35@38c
Carpenters', Red ..... *gro.* 30@33c
Carpenters', White ..... *gro.* 25@23c
See also Crayons.

Checks, Door—

Bardsley's 45%
Columbia ..... 50&10%
Eclipse ..... 60&10%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools 55%
Youths' Chests, with Tools 40%
Gentlemens' Chests, with Tools 30%
Farmers', Carpenters', etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty 50%
Tool Cabinets 50%
C. E. Jennings & Co.'s Machinists' Tool Chests ..... 33⅓&10%

Chisels—

Socket Framing and Firmer
Standard List ..... 70c@10@75c@10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Socket Firmer No. 10 ..... 60%
C. E. Jennings & Co. Socket Framing No. 15 ..... 60%
Ohio Tool Co.'s 70%
Swan's 70%
L. & I. J. White ..... 30@30&5%

Tanged—
Tanged Firmers ..... 40c&5@40&10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Nos. 191, 181 ..... 25%
L. & I. J. White, Tanged ..... 25&5%

Cold—
Cold Chisels, good quality. lb. 13@15c
Cold Chisels, fair quality..lb. 11@12c
Cold Chisels, ordinary ..... lb. 9 @10c

Chucks—

Beach Pat., each $8.00 ..... 35&5%
Pratt's Positive Drive 25%
Empire 25%
Blacksmiths' 25%
Skinner Patent Chucks:
Independent Lathe Chucks 50%
Universal 50%
Combination 50%
Drill Chucks, New Model 30%
Drill Chucks, Standard 40%
Drill Chucks, Skinner Patent, 0, 1, 2 ..... 40%
Drill Chucks, Skinner Patent, 3, 4, 5, 6, 7, 8 ..... 30%
Drill Chucks, Positive Drive 30%
Planer Chucks 25%
Face Plate Jaws 40%
Standard Tool Co.:
Improved Drill Chuck 45%
Union Mfg. Co.:
Combination 50%
Czar Drill 35%
Combination Geared Scroll 40%
Geared Scroll 40%
Independent 50%
Independent Steel 40%
Union Drill 45%
Universal 50%
Independent Iron Face Plate Jaws 40%
Independent Steel Face Plate Jaws 40%
Westcott Patent Chucks:
Lathe Chucks 50%
Little Giant Auxiliary Drill 50%
Little Giant Double Grip Drill 50%
Little Giant Drill, Improved 50%
Oneida Drill 50%
Scroll Combination Lathe 50%

Clamps—

Adjustable, Hammers' ..... 20@20&5%
Cabinet, Sargent's ..... 50&10%
Carriage Makers', P., S. & W. Co. 50%
Carriage Makers' Sargent's 60%
Beaver Parallel ..... 33⅓&10%
Linemans' Utica Drop Forge & Tool Co 40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Drain—

Iwan's Champion, Adjustable 53%
Iwan's Champion, Stationary 45%

Sidewalk—

Star Socket, All Steel ..... ₩ doz. $4.05 net
Star Shank, All Steel ..... ₩ doz. $3.24 net
W. & C. Shank, All steel, ₩ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros. 30%
New Haven Edge Tool Co.'s 45%
Fayette R. Plumb ..... 33⅓@33⅓&10%
L. & I. J. White 30%

Clippers—

Chicago Flexible Shaft Company:
₩ Chicago Horse ..... $8.75 } 15%
1902 Chicago Horse ..... $10.75 }
20th Century Horse, each, $5.00 ..... 20%
Lightning Belt ..... $15.00 } 15%
Chicago Belt ..... $20.00 }
Stewart's Patent Sheep. $12.75 ..... 30%

Finger Nail Clippers—

Smith & Hemenway Co. ..... doz. net $2.00

Clips, Axle—

Eagle 5-16 and ⅜ inch ..... 75@75c&10%
Norway, 5-16 and ⅜ inch ..... 60c@10@70%

Cloth and Netting, Wire

—See Wire, &c.

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks. 70c@10@75%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list 40%
Leather, Walter B. Stevens & Son's list 40%

Combs, Curry—

Metal Stamping Co 40%

Mane and Tail—

Covert's Saddlery Works ..... 60&10%

Compasses, Dividers, &c.

Ordinary Goods ..... 75c&5@75c&10%
Bemis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Double 65%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Compasses 50%

Conductor Pipe, Calva—

L. C. L. to Dealers:

Territory.	*Nested.*	*Not nested.*
A. Eastern.	75c&12½&5%	75c&7½%
B. Eastern	75c&10&7½%	75c&12½%
Central	75c&12½%	75c&5%
Southern	70c&10c&5%	70c&10%
S. Western	70c&12½%	70c&7½%

Terms, 60 days, 2% cash, 10 days. Factory shipments generally delivered.
See also *Eave Troughs.*

Coolers, Water—

Gal. each.	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	2.40	$3.00	
Gal.	2	3	4	6	8
Galv. Lined Ea	$1.85	$2.00	$2.2	$2.90	$3.90

25%

Ga.v. Lined side handles

Gal.	2	4	6	3
Each.	$1.95	$2.15	$2.40	$3.50	$4.15..25%

Coopers' Tools—

See *Tools, Coopers'.*

Cord—Sash—

Braided, Drab ..... *lb.* 35c
Braided, White, Com ..... *lb.* 21@22c
Cable Laid Italian..lb. A, 18c; B, 16c
Common India ..... *lb.* 10@10½c
Cotton Sash Cord, Twisted ..... 11@16c
Patent Russia ..... *lb.* ..@15c
Cable Laid Russia ..... *lb* ..@15c
India Hemp, Braided ..... *lb* ..@18c
India Hemp, Twisted ..... *lb.* 12@13c
Patent India, Twisted ..... *lb.* 12@13c

Anniston Cordage Co.: Braided Cotton.
Old Glory, Nos. 7 to 12 ..... ₩ lb 28 ¢
Anniston, Nos. 7 to 12 ..... ₩ lb 22 ¢
Old Colony, Nos 7 to 12 ..... ₩ lb 22 ¢
Anniston Drab, Nos. 7 to 12 ..... ₩ lb 26 ¢
Pearl Braided, cotton, No. 6, ₩ lb. 22¢
Nos. 7 to 12 21¢.
Eddystone Braided. Nos. 7, 8, 9 and 10 ..... ₩ lb 21¢
Eddystone Braided Cotton .No. 6, ₩ lb 25¢
Harmony Cable Laid Italian. No. 7 to 10 ..... ₩ lb 33½
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 14¢
Cable Laid India ..... 12¢
Braided India ..... 18¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton ..... ₩ lb 36½¢
Braided, Italian Hemp ..... ₩ lb 36¢
Braided, Linen ..... ₩ lb 53¢
Braided, White Cotton or Spot. ₩ lb 33¢
Massachusetts, White ..... ₩ lb 28 ¢
Massachusetts, Drab ..... ₩ lb 32 ¢
Phœnix, White, No's 7 to 12 ..... 24¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab ..... 40¢
A quality, White ..... 35¢
B quality, Drab ..... 35¢
B quality, White ..... 30¢
Italian Hemp ..... 40¢
Linen ..... 57½¢

Wire, Picture—

List Oct., '00. 85c&10c@10@85c&10c@10c&5%
Hendryx Standard Wire Picture Cord .. 85&10&5%

Cradles—

Grain ..... 40¢@12½%

Crayons—

White Round Crayons, gross.5½@6c Cases, 100 gro., $4.00, at factory.
D. M. Steward Mfg. Co.
Jumbo Crayons ..... gr. $3.50
Metal Workers' Crayons..gr. $2.50
Soapstone Pencils, round, flat or square ..... gr.$1.50
Rolling Mill Crayons ..... gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 30%
Zelnicker's Lumber:
Red, Blue, Green ..... ₩ gro. $6.50
Black ..... ₩ gro. $4.00
See also *Chalk.*

Crooks, Shepherds'—

Fort Madison, Heavy ..... ₩ doz. $7.00
Fort Madison, Light ..... ₩ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden 50%

Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847 ..... ₩ doz. $3 50
Star, Eagle, Rogers & Hamilton and Anchor ..... ₩ doz. $3.00
Wm. Rogers & Son ..... ₩ doz. $2 50

Cutters—Glass—

H. H. Mayhew Co 40%
Red Devil 50%
Smith & Hemenway Co 50%
Woodward 40%

Meat and Food—

American 30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50	$60

Enterprise ..... 25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's, ₩ doz. ..... 30&10@40%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal ..... 40&10@50%
Little Giant, ₩ doz. ..... 33⅓@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E Food Choppers 40%
New Triumph No. 605, ₩ doz. $24.00 ..... 30&10@10%
Russwin Food No. 1, $24 00; No. 2, $27.00 ..... 45&10&10%
Woodruff's, ₩ doz ..... 30&10@40%

Nos	100	150
	$15.00	$18.00

Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9..55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife ..... ₩ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ₩ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40%
Slaw Cutters, 1 Knife, ₩ gr. ..$18@$20
Slaw Cutters, 2 Knife, ₩ gr. ..$22@$36

Tobacco—

All Iron, Cheap ..... *doz.* $4.25@$4.50
Enterprise ..... 25@50%
National, ₩ doz. No. 1, $21; No. 2, $18.. 40%
Sargent's, ₩ doz., No. 2 ..... 60%
Sargent's No 12 and 21 ..... 60&10%

Washer—

Appleton's, ₩ doz. $16.00 ..... 50&10&10%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger...per doz., $9.00
Iwan's Improved Post Hole Auger. 40&5%
Iwan's Vaughan Pattern Post Hole Augers, ₩ doz $6.25
Iwan's Perfection Post Hole Digger... ₩ doz. $8.25
Iwan's Split Handle Post Hole Diggers, ₩ doz $7.25
Kohler's Universal ..... ₩ doz. $15.00
Kohler's Little Giant ..... ₩ doz. $12.00
Kohler's Hercules ..... ₩ doz. $10.00
Kohler's Invincible ..... ₩ doz. $9 00
Kohler's Rival ..... ₩ doz. $8.00
Kohler's Pioneer ..... ₩ doz. $7.20
Never-Break Post Hole Diggers, ₩ doz. $24.00 ..... 60%
Samson, ₩ doz. $34.00 ..... 25%

Dividers—See *Compasses.*

Doors Screen—

Phillips', style E, ¾ in. ..... ₩ doz, $10.50
Phillips', style 077, ¼ in. ..... ₩ doz, $8.00
Phillips', style x-y, ¾ in. ..... ₩ doz, $11.00

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₩ doz. $18; No. 2, $15; No. 3, $1 ..... 1 8

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers 35%
Diamond Wheel Dresser Cutters 35%

Drills and Drill Stocks—

Common Blacksmiths' Drill..each $1.50@$1.75
Breast, Millers Falls ..... 15&10%
Breast, P. S. & W ..... 40&5%
Goodell Automatic Drills..40&5@40&10%
Jones & Lamson Automatic Drills Nos. 2 and 3 ..... 10%
Johnson's Drill Points 10%
Millers Falls Automatic Drills ..... 33⅓&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's 33⅓%
Ratchet, Whitney's, P.S. & W 50%
Whitney's Hand Drill, No. 1, $10.00 ..... 30%
Adjustable, No. 10, $12.00 ..... 33⅓%

Twist Drills—

Bit Stock ..... 60c&10@60c&10c&10%
Taper and Straight Shank ..... 60c&10@60c&10c&5%

Drivers, Screw—

Screw Driver Bits..per doz. ..45@60c
Baisey's Screw Holder and Driver, ₩ doz. 2¼-inch, $6; 4-in., $7.50 6-in., $9 ..40%
Buck Bros' Screw Driver Bits 30%
Champion 50%
Edson 60%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay's Double Action Ratchet 33%
Goodell's Auto 50&10&10@50&10&10&5%
Hurwood 40%
Mayhew's Black Handle 40%
Mayhew's Monarch ..... 40&10%
Millers Falls, Nos. 20 and 21 ..... 25&10%
Millers Falls, Nos. 11, 12, 41, 42 ..... 15&10%
Never Turn 60%
New England Specialty Co 50%
Sargent & Co.'s:
Nos. 1 and 60 ..... 50&10&10%
Nos. 50 and 55 ..... 60&10%
Nos. 20 and 40 ..... 70&10%
Smith & Hemenway Co ..... 40&10%
H. D. Smith & Co.'s, Perfect Handle 40%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles 60&10&10%
No. 86 ..... 70@70&10&10%
Swan's:
Nos. 65 to 68 ..... 50%
No. 40 ..... 40&10%
Nos. 25, 35 and 45 ..... 20&10&10%

Eave Trough, Galvanized

Territory.	*L. C. L.*
A. Eastern	80c&10c&5%
B. Eastern	80c&10c&10%
Central	80c&10c&5%
Southern	80%
S. Western	75c&10c&10%

Terms, 2% for cash. Factory shipments generally delivered.
See also *Conductor Pipe and Elbows.*

Elbows and Shoes—

Factory shipments:
Plain Rd., and Cor., 2, 3, and 4in.75%
Plain Rd., and Cor., 5 and 6in..60%
Perfect Elbows (S. S. & Co.) 40%

Emery, Turkish—

	4to5	5½to15	Flour
Kegs ..... *lb.*	5c	5½c	3 ½
½ Kegs ..... *lb.*	5½c	5¾c	3¾
Kegs ..... *lb*	5c	6c	
10-lb cans. 10 in case	6½c	7c	6c
10-lb. cans, less than	10.10c	10c	8c

Note.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—

Zimmerman's ..... 50&10%
Walling's 45%

Cord and Weight—

Ives 40%

Faucets—

Cork Lined ..... 50@50&10%
Metallic Key, Leather Lined 70@70&10%
Red Cedar ..... 40@40&10%
Petroleum ..... 70c&10@75%
B. & L. B. Co.:
Metal Key ..... 60&10%
Star 60%
West Lock ..... 50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Metal Key. 50&10%
John Sommer's Duplex Metal Key 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined 50%
John Sommer's Reliable Cork Lined ..... 50&10%
John Sommer's Chicago Cork Lined 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's No Brand, Cedar 50%
John Sommer's Perfection Cedar 40%
McKenna, Brass:
Burglar Proof, N. P. 20%
Improved, ¼ and ⅜ inch 20%
Self Measuring:
Enterprise, ₩ doz. $60.00 ..... 40&10%
Lane's, ₩ doz. $36.00 ..... 40&10%
National Measuring, ₩ doz. $36..40&10%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised Nov. 1, 1899.
Best Brands ..... 70c&10@75c&5%
Standard Brands 75c&10@75c&10&10%
Lower Grade ..... 75c&10c&10@80c&10%

Imported—
Stubs' Tapers, Stubs' list, July 2d, '97 ..... 30%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal No. 103 ..... 34%
Special No. 104 ..... 34%
Fusible Links 20%
Expansion Bolts ..... 50&10%

Grindstone—

Net Prices:

Inch	15	17	19	21	24
Per doz.	$2.15	2.85	3.25	3.75	4.50

P., S. & W. Co ..... 30&10@40%
Reading Hardware Co 60%
Sargent's 20%
Stowell's Giant Grindstone Hanger ..... ₩ doz. $6.50
Stowell's Grindstone Fixtures, Extra Heavy ..... 50&10&10%
Stowell's Grindstone Fixtures Light ..... 40&5%

Fodder Squeezers—

See *Compressors.*

Forks—

Base Discounts Aug. 1, 1899, list;
Hay, 2 tine.....50&10c&5%
Boys', & Fish, 2 tine.....50&10c&5%
Hay & Boys', 3 tine.....60c&5%
Hay & Boys', 4 tine.....66⅔%
Champion Hay.....66⅔%
Hay & Header, long 3 tine.....60%
Header, 4 tine.....65%
Barley, 4 & 5 tine, Steel.....60&20%
Manure, 4 tine.....60&15&2½%
Manure, 5 and 6 tine.....66⅔&2½%
Spading.....70&2½%
Potato Digger, 6 tine.....60&10%
Sugar Beet.....40&10%
Coke & Coal.....40&10%
Heavy Mill & Street.....65%
Iowa Dig-Eez Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—*See Spoons.*

Frames—Saw—

White, Straight Bar, per doz. 75@80c
Red, Straight Bar, per doz $1.00@$1.25
Red, Double Brace, per doz. $1.40@1.50

Freezers Ice Cream—

Qt..... 1 2 3 4 6
Each.... $1 25 $1 60 $1 90 $2.20 $2.80

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—*See Pans, Fry.*

Fuse—

Per 1000 Feet.

Hemp.....$2.75
Cotton.....3.20
Waterproof Single Taped..3.65
Waterproof Double Taped..4.40
Waterproof Triple Taped..5.15

10&2½%

Gates Molasses and Oil—

Stebbins' Pattern.. 80c&10@80c&10c&5%

Gauges—

Marking, Mortise, &c.....
50c&10c&5@50c&10c&10c&5%
Chapin-Stephens Co.:
Marking, Mortise, etc.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt & Babbet Gauge.....20@20&10&10%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire P. S. & W. Co.....30&10%

Gimlets—Single Cut—

Nail, Metal, Assorted, gro. $1.50@1.50
Spike, Metal, Assorted gro. $2.80@3.50
Nail, Wood Handled, Assorted, gro. $1.75@2.00
Spike, Wood Handled, Assorted gro. $4.25@4.50

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

Glue—Liquid Fish—

Bottles or Cans, with Brush....35@50%
Cans (½ pts., pts., qts., ½ gal., gal.).....35@48%
International Glue Co. (Martin's).....
40&10%

Grease Axle—

Common Grade.....*gro. $4.50@5.50*
Dixon's Everlasting....10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs..₱ doz. 1 lb $1.20; 2 lb $2.00

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz..$2.00
Pike Mowe Knife and Tool Grinder, each..$5.00
33⅓%
Velox Ball Bearing, mounted, Angle Iron Frames.....each, $3.25

Halters and Ties—

Covert Mfg. Co.:
Web.....40&2½%
Jute Rope.....40&5&2%
Sisal Rope.....30%
Cotton Rope.....45&2%
Hemp Rope.....45&2%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters.....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties..70%
Sisal Rope Ties.....60&10%

Hammers—Handled Hammers—

Heller's Machinists'..40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40@40& 0&10%
Peck, Stow & Wilcox.....40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail.35½&2½@35½&10&7½%
Engineers' and B. S. Hand.....
50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....
40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—

Under 3 lb., per lb. 50c..20c&10c&10@35%
3 to 5 lb ....per lb 40c..30c&10c&10@35%
Over 5 lb...per lb. 30c..... 35@ 45c&10%
Wilkinson's Smiths'.....9½c@10c lb.

Handles—Agricultural Tool Handles—

Axe, Pick, &c.....45@50c&5%
Hoe, Rake, &c.....45@50c&5%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50c&5%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted.....*gro. $2.50@$2 85*
Brad Awl.....*gro. $1.65@$1 85*
Chisel Handles:
Apple Tanged Firmer, gro. ass'd, $2.40@$2,65
Hickory Tanged Firmer, gro. ass'd. $1 15@$2.40
Apple Socket Firmer, gro. ass'd, $1 75@$1.95
Hickory Socket Firmer, gro. ass'd. $1.45 @ $1.60
Hickory Socket Framing, gro. ass'd, $1.60@$1.75
File, assorted.....*gro. $1.30@$1.40*
Hammer, Hatchet, Axe, &c.....50%
Hand Saw, Varnished, doz .80@85c
Not Varnished.....65@75c
Plane Handles:
Jack doz.30c; Jack Botted.....75c
Fore, doz.....45c; Fore, Bolted 90c
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle, ₱ gro.....$0.85@$1.50

Hangers—

NOTE.—*Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.*

Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Single Doz.	$0.90	1.25	1.60	1.95	2.50

Barn Door, New England Pattern, Check Back, Regular:

Inch	3	4	5	6
Single Doz.	$1.20	1.85	2.50	3.00

Extra 5&10% often given.

Alith Mfg. Co.
Reliable No. 1.....per doz. $3.00
Reliable No. 2.....per. doz. $9.60
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10&5%
Roller Bearing.....70&5%
Griffin Mfg. Co:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.....70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers $16.00.....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor New Champion.....$2.25
Barn Door, Standard...60&10&2½%
Hinged.....net $6.40
Covered.....60&10%
Special.....70&5%
Lawrence Bros.:
Advance.....60&10%
Cleveland.....70&5%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1 25.
Giant.....60&5%
Hummer.....70&5
New York.....60&10%
Peerless.....70&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3.....$2.15
Ball B'r'g Steel Track No. 10.....$2.40
Roller B'r'g Steel Track No. 12..$2.80
Ball B'r'g Steel Track No 13..$2.40
Roller B'r'g steel Track No. 14..$2.80
Hero Adjustable Track No. 19...50%
Adjustable Track Tandem Trolley Track No. 16.....50%
Seal, Steel Track No. 8.....$2.40
Auto Adjustable Track No. 22.40&10%
Trolley B. D. No. 17.....$1.40
Trolley F. D. No. 120.....$2.35
Trolley F. D. No. 121.....$2.45
Trolley F. D. No. 151.....$2.60
Safety Underwriters F.D. No. 101$2.25
Tandem No. 44.....70&5%
Trolley F. D. No. 151.....$3.00
Palace, Adjustable Track No. 132.....40&10&5%
Royal, Adjustable Track No. 122.....40&10%
Ives' Wood Track No. 1.....$2.15
Trolley B. D. No. 20.....$1.35
Trolley B. D. No. 24.....$1.45
Trolley B. D. No. 27.....$1.50
Trolley B. D. No. 28.....$1.66
Roller Bearings Nos. 39, 40, 41, 43, 44.....70&5%
Anti-friction No. 42.....60&10%
Hinged Tandem No. 48.....60%
Folding Door B. B. Swivel No. 125.30%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing.....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....30%
Freight Car Door.....6%
Interstate.....60&10%
Lundy Parlor Door..50&10%
Magic.....60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....53&10%
Railroad.....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500.....50&10%
Underwriter's Fire Door.....40%
Wild West Warehouse Door.....50%
Zenith for Wood Track.....50&10%
A. L. Swett Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle.....70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.....50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....50&10%
L. T. Roller Bearing.....60&10&5%
New Era Roller Bearing.....50&10%
O. K. Roller Bearing.....60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing.....60&10%
Tandem Nos. 1 and 2.....50%
Underwriters' Roller Bearing ...40%
Velvet.....50%
Wilcox Auditorium Ball Bearing.20%
Wilcox Barn Trolley No. 123.....40%
Wilcox Elv. Door, Nos 112 and 122½.50%
Wilcox Elv. Door, No. 132.....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century.....50&10&10%
Wilcox O. K. Steel Track.....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing....40%
Wilcox Wideman Narrow Gauge, Ball Bearing.....40%
For Track, see *Rail*

Hangers, Garment—

Pullman Trouser, No. 1, ₱ gro.....$9.00
Pullman Trouser, No. 4, ₱ gro.....$24.00
Victor Folding ₱ gro.....$9.60
Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ₱ dozen set.4.80

Hasps—

McKinney's Perfect Hasp, ₱ doz.....50%

Hatchets—

Regular list.....35⅓@35⅓&10%

Heaters Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No 8, 2.25; No. 8D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....1%
Clark Coal, $0.75 ₱ doz.....10%

Hinges—Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1888 O. P. Niagara; Clark's O. P.; Clark's Tip; Buffalo.

No.	1	3	5
Doz. pair	$0.85	1.75	3.50

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter, (Buffalo, &c.)

No.	1	1½	2
Doz. pair	$0.75	.70	.65

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70@75%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11 & 13.....75%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.90 with screws, $1.35.
Wrightsville H'dware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 0, 65, 55, 70&10%
Niagara, Gravity Locking, No... 1, 3 & 5.....75%
1888, Old Pat'n, Nos. 1, 3 & 5.....75%
Tip Pat'n, Nos. 1, 3& 5.....75%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75..75%
Steamboat Gravity Locking, No. 10..75%
Pioneer, Nos. 000, 45 & 55.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	$1.40	2.05	3.80
Latches only	.70	.70	.35

New England:
With Latch.....*doz* ....@$2.00
Without Latch....*doz.* ....@$1.60
Reversible Self-Closing:
With Latch.....*doz.* ....@$1.75
Without Latch.....*doz.* ....@$1.35
Western:
With Latch.....*doz. $1.75*
Without Latch.....*doz. $1.15*
Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—

Holdback Cast Iron gro...$9.00@9.50
Non-Holdback, Cast iron, gro. $8@8.50
J. Bardsley
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer Ball Bring Floor Hinges40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges.....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House..25%
Keene's Saloon Door.....25%
Columbian Hdw. Co.:
Acme, Wrt. Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....₱ gr. $9.00
Columbia, No. 18.....₱ gr. $25.00
Columbia, Adjustable, No. 7, ₱ gr. $12.00
Gem, new list.....30%
Clover Leaf.....₱ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co. Matchless.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co:
Chief Ball Bearing Floor Hinge.50%
Ohio Detachable Screen Door Hinge ₱ gro. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr $12.50
Ideal, No. 4.....₱ gr. $9.00
New Idea No. 1.....₱ gr. $9.00
New Idea, Double Acting.....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k..₱ gro. pr. $9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar 15, 1901:
Light Strap Hinges.....80c&5%
Heavy Strap Hinges 80c&20c&10%
Light T Hinges.....75c&10c&5%
Heavy T Hinges.....75c&5%
Extra Heavy T Hinges..80c&5%
Hinge Hasps.....70%
Cor. Heavy Strap....80c&20c&10%
Cor Ex. Heavy T.....80c&20%

Extra 3 or 4 to a lb

Screw Hook and Strap. { *6 to 12 in*.....*lb.* 3¼c; *14 to 20 in*.....*lb.* 3 c; *22 to 36 in*.....*lb.* 2¾c
Screw Hook and Eye:
¾ to 1 inch.....*lb.* 6 c
1¼-inch.....*lb.* 7 c
1½-inch.....*lb.* 9 c

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers.....35%

Hods, Coal—

	15	16	17	18 inch.
Galv. Open	$2.50	2.75	3.00	3.25 ₱ doz.
Jap. Open	$1.90	2.10	2.25	2.55 ₱ doz.
Galv. Funnel	$3.00	3.30	3.60	3.90 ₱ doz.
Jap. Funnel	$2.45	2.65	2.85	3.30 ₱ doz.

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar.....each $1.45
Steel Brick.....each $1.10

Hoes—Eye—

Scovil and Oval Pattern.....
60c&10@60c&10c&10%
Grub, list Feb. 23, 1899 70c&10@75c&10%
D. & H. Scovil.....50%

Handled—

Aug. 1, 1899, List:
Field and Garden.....70c&10%
Smith's Patent.....50%
Meadow & Rhode Island.....75%
Black Diamond.....70c&10%
Mortar and Street.....70c&10c&10%
Planters'.....75c&12½%
Cotton.....70c&10c&10%
Cotton Chopper.....75c&12½%
Weeding Hoes.....66⅔c&15%
Steel Weeders.....66⅔c&15%
Malleable Weeders.....66⅔c&15%
Ft. Madison Cotton Hoe.....70&10c&10%
Ft. Madison Crescent Cultivator Hoe per doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight..₱ doz. 66⅔%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz..50%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6¼ in.....$3.85
Acme Weeding.....₱ doz. net, $4.35
W. & C. Lightning Shuffle Hoe, ₱ doz. $4.85

Hoisting Apparatus—

See Machines, Hoisting.

Holders—Bit—

Angular, ₱ doz. $24.00.....45&10%

Door—

Empire.....50%
Bardsley's.....45%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Hooks—Cast Iron—

Bird Cage, Reading.....60%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List.....50&10&10%
Clothes Line, Reading List.....6&10%
Clothes Line, Sargent's List. 50&20&10%
Coat and Hat, Sargent's List.....50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....60%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—

Belt.....80c—%
Wire C. & H. Hooks.....75c&5@75c&10%
Atlas, Coat and Hat:
Single Cases.....75%
10 Case Lots.....75&10%
Columbian Hdw Co. Gem.....60&10%
Baker Wire Goods Co.: King.....75&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%

Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....70&10%
Czar.....65%
V Brace.....70&10%
Czar Harness.....50&10%

Wrought Iron—

Box, 6 in., per doz. $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....doz. $1.05@1.25
Wrought Staples, Hooks, &c.—
See *Wrought Goods.*

Miscellaneous—

Hooks, Hench, see *Stops. Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25

Grass.....Nos.	*1*	*2*	*3*	*4*
Best.....	*$1.50*	*1.75*	*2.00*	
Common.....	*$1.30*	*1.50*	*1.60*	

Potato and Manure .....60@15%
Wh fletree.....lb. 5½@6c
Hooks and Eyes:
Brass.....60@10@10@70%
Malleable Iron.....70@5@70@10%
Covert Mfg. Co, Gate and Scuttle Hooks 35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $5.25 net
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—

See *Shoes, Horse.*

Hose Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 4½@ 5 c
3-ply Standard.....ft. 6½@ 7 c
4-ply Standard.....ft. 7½@ 8 c
3-ply extra.....ft. 8½@ 9 c
4-ply extra.....ft. 10 @10½c
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 6 @7 c
Fair quality.....ft. 8 @9 c

Irons—Sad—

From 4 to 10.....lb. 2¾@3 c
B. B. Sad Irons.....lb. 3¼@3½c
Chinese Laundry.....lb. 4½@5c
Chinese Sad.....lb. 4@4½c
Mrs. Potts', cents per set:

Nos.....	*50*	*55*	*60*	*65*
JapdTops	*62*	*59*	*72*	*69*
TindTops	*65*	*62*	*75*	*72*

New England Pressing.lb.. 3½@4c

Pinking—

Pinking Irons.....doz. 50@60c

Soldering—

Soldering Coppers 2¼ and 3..19@20c
1¼ and 2.....21@22c

Jacks Wagon—

Covert Mfg. Co.:
Auto Screw.....30&5%
Steel.....45&2%
Covert's Saddlery Works':
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&5%
Richards' Tiger Steel, No. 130.....40%

Kettles—

Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Shear & Cutlery Co.....50%

Corn—

Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.90; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....70&10@75&10%
C. E. Jennings & Co. Nos. 45, 46.....60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....70&10&2½%
Watrous.....16⅔%
L. & I. J. White.....30&5@25%

Hay and Straw—

Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Mincing—

Buffalo.....₱ gro. $13.00

Miscellaneous—

Farriers'.....doz. $3.00@3.25
Wostenholm's.....₱ doz. $3.00@3.25

Knobs—

Base, 2¼-inch, Birch, or Maple, Rubber tip, gro.....$1.10@1.15
Carriage, Jap, all sizes..gro. 40@55c
Door, Mineral.....doz. 65@70c
Door, Por. Jap'd.....doz. 70@75c
Door, Por. Nickel....doz. $2.05@3.15
Bardsley's Wood Door, Shutter, &c...15%
Picture, Sargent's.....60&10&10%

Lacing Leather—

See *Belting, Leather—*

Ladders, Store &c.—

Lane's Store.....25%
Myers Noiseless Store Ladders.....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....40%
Climax Shelf, No. 115.....40%
Trolley, No. 109.....40%

Ladies—Melting—

L. & G. Mfg. Co, Low List.....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—

Regular Tubular No. 0, doz. $4.35@4.75
Lift Tubular..No. 0..doz. $4.75@5.25
Hinge Tubular, No. 0..doz. $4.75@5.25
Other Styles.....40c@10@40c@10c&5%

Bull's Eye Police—

No. 1, 3¾ inch.....$2.50@2.75
No. 2, 3 inch.....$2.75@3.00

Lasts and Stands Shoe—

Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches—Thumb—

Roggin's Latches, with screw, doz $4.00

Door—

Richards' Bull Dog, Heavy, No. 125....40%
Richards' Trump, No. 127.....50%

Leaders Cattle—

Small.....doz. 55c; large, 60c
Covert Mfg. Co.....35%

Lifters, Transom—

R & E.....33⅓%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet.....	*$2.20*	*2.00*	*1.65*
75 feet.....	*$1.80*	*1.70*	*1.30*

Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3.....40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr.....20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Anniston Waterproof Clothes, 50 lb., ₱ gro.: $24.00; Gilt Edge, $22.00; Air Line $22.00; Acme, $17.00; Alabama, $15.00; Empire, $14.00; Advance, $13.50; Oriole, $20.00; Albermarle, $13.50; Eclipse, $12.50; Chicago, $11.00; Standard, $10.00; Columbia, $8.50; Allston, $12.50; Calhoun, $11.00.

Locks—Cabinet—

Cabinet Locks.....33⅓@33⅓&7½%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]
Reading Hardware Co.....45&20%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—

Stowell's.....50%

Padlocks—

Wrought Iron.....75&10c&5@80c&5%
R. & E. Mfg. Co. Wrt. Steel and Brass.....75@75&10%

Sash, &c.—

Ives' Patent.:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock.....25%
Reading.....60%

Machines—Boring—

Com. Upright, Without Augers..$2.00
Com. Angular, Without Augers..$2.25
Without Augers.

R. & E. Mfg. Co.:	Upright.	Angular.
Improved No. 3	$4.25	No. 1 $5.00
Improved No. 4.	3.75	No. 2. 3.38
Improved No. 5.	2.75	
Jennings'..Nos. 1 and 4		.35&5%
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75

Corking—

Reisinger Invincible Hand Power.....₱ doz $48.00

Fence—

Williams Fence Machines.....each, $5.50

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Rock Brake.30%

Ice Cutting—

Chandler's.....12½%

Washing—

Boss Washing Machine Co.: Per doz.
Champion Rotary Banner No. 1..$54.00
Standard Champion No. 1.....48.00
Standard Perfection.....36.00
Cinti Square Western.....30.00
Uneeda American, Round.....29.00

Mallets—

Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners', Hickory and Applewood, doz.....50@55c

Mangers, Stable—

Swett Iron Works.....50%

Mashers, Vegetable—

Western, W. G. Co., Potato.....60&10%

Mats—Door—

Elastic Steel (W. G. Co.).....10%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk*

Mills—Coffee, etc.—

Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swirl, Lane Bros Co.....30%

Mowers, Lawn—

Net prices are generally quoted.
Cheap.....all sizes. $1.75@2 00
Good.....all sizes, $2.25@2.50

	10	*12*	*14*	*16-inch*
High Grade	*4.25*	*4.50*	*4.75*	*5.00*

Continental.....60&5%
Great American.....70%
Great American Ball Bearing, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing.....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K. T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, low list...40&5%

Nails—

Wire Nails and Brads, Papered. List July 20, 1899.....90@90&10%
Cut and Wire. See Trade Report.
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	*6*	*7*	*8*	*9*	*10*	
Anchor	23	21	20	19	18	.....40&5%
Champ.'in.	28	26	25	24	23	.....50%
Coleman...	15	13	13	11	11	.....net

Nos.	*6*	*7*	*8*	*9*	*10*	
New Haven	23	21	20	19	18	.....40&5%
Putnam....	23	21	20	19	18	.....33⅓%
New P'tn'm	19	18	17	16	16	.....10&10%
Western, per lb						.....8½¢

Jobbers' special brands, per lb. 8@8½c

Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass Head.	*.55*	*.60*	*.70*	*.95*	*1.00 gro.*
Por. Head...	*..*	*1.10*	*1.10*	*1.10*	*.. gro.*

Nippers, See *Pliers and Nippers.*

Nuts—

Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, plain.....$5.10
Hexagon, plain.....$5.60
Square, C. T. & R.....$5.30
Hexagon, C. T. & R.....$5.00
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank.....$5 80
Hexagon Blank.....$6.30
Square Tapped.....$5 80
Hexagon Tapped.....$6 30

Oakum—

Best or Government.....lb. 6½c
Navy.....lb. 5 c
U. S. Navy.....lb. 6 c
Plumbers' Spun Oakum.....5½c
In carload lots ½c lb. off f. o. b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....50c&10%
Tin or Steel.....65c&10%
Zinc.....65c&10%
Chase or Paragon:
Brass and Copper.....45c&10@50%
Tin or Steel.....65c&10%
Zinc.....65c&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz.20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers etc,.....60@60&10%

Openers—Can—

French.....doz. 35c
Iron Handle.....doz. 25@27c
Sprague, Iron Hdle..per doz. 35@40c
Sardine Scissors...doz. $1.75@3.00
National.....50%
Stowell's Sprague.....per doz. 35@45c

Egg—

Nickel Plate.....per doz., $2.00
Silver Plate.....per doz., $4.00

Packing—

Asbestos Packing, Wick and Rope, 1½@15c lb.

Rubber—

Sheet, C. I.....8@10c
Sheet, C. O. S.....9@15c
Sheet, C. B. S.....10@15c
Sheet, Pure Gum.....50@65c
Sheet, Red.....40@50c
Jenkins' '90, ₱ lb 90c.....25@25&5%

Miscellaneous—

American Packing.....7@10c lb.
Cotton Packing.....16@25c lb.
Italian Packing.....9@12½c lb.
Jute.....4@4½c lb.
Russia Packing.....8@11c lb.

Pails—Creamery

S. & J. & Co., with gauges.. No 1 $9.25; No. 2, $8.50 ₱ doz.

Pails, Water, Well, &c.—

See *Buckets*

Pans—Dripping—

Standard List.....60c@10@60&10c&5%

Fry—

Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galv.

Inch	*12*	*14*	*16*	*18*
Per. doz.	*$1.95*	*2.25*	*2.80*	*3.15*

Roasting and Baking—

Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.25; 20, $5.75; 30, $6.25.
Savory, ₱ doz., net, Nos. 300, $9.00; 400, $15.00.
Simplex, ₱ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	31.00	39.00	46.00

Paper—Building Paper—

Asbestos:	*lb.*
Building Felt.....	*3½c*
Mill Board, sheet, 40 x 40 inches	*3½c*
Mill Board, roll, thicker than 1-16 inch.....	*3½c*
Mill Board, roll, 1-16 in. thick and less.....	*2½c*

	Per roll
Rosin Sized Sheathing: 500 sq. ft.	
Light wt., 25 lbs. to roll..	*$0.40@0.45*
Medium wt., 30 lbs. to roll..	*$0.45@0.50*
Heavy wt., 40 lbs. to roll..	*$0.65@0.70*
Black Water Proof Sheathing, 500 Sq ft, 1 ply, 65c; 2 ply, 85c; 3 ply, $1.10; 4 ply, $1.25.	
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....	*$41.00*
Red Rope Roofing, 250 sq. feet per roll.....	*$1.75*

NOTE.—*These goods are often sold as delivered prices.*

Tarred Paper.

1 ply (roll 200 sq. ft.), ton..$32.50@35.00
2 ply, roll 108 sq. ft.....55@60c
3 ply, roll 108 sq. ft.....78@80c
Slater's Felt (roll 500 sq. ft.).....75c
NOTE.—*Above prices often include delivery, and are for Eastern territory, where prices are controlled by agreement between the manufacturers. In open territory much lower prices are current.*
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—

Flint Paper and Cloth...50c&10@60%
Garnet Paper and Cloth.....25%
Emery Paper and Cloth...50c&10@60%

Parers—Apple—

Advance	₱ doz.	$4.00
Baldwin	₱ doz.	$4.00
Bonanza Improved	each	$6.50
Daisy	₱ doz	$4.00
Dandy	each	$7.50
Eureka Improved	each	$20.00
Family Bay State	₱ doz.	$15.00
Improved Bay State	₱ doz.	$36.00
Little Star	₱ doz.	$5 00
New Lightning	₱ doz.	$7.00
Reading 72	₱ doz.	$3.25
Reading 78	₱ doz.	$6.25
Rocking Table	₱ doz.	$6.20
Turn Table '98	₱ doz.	$9.00
White Mountain	₱ doz.	$5.00

Potato—

Saratoga.....₱ dos. $7.00
White Mountain.....₱ dos. $6 00

Picks and Mattocks—

List Feb. 23, 1899 .....70c&10@75c&10%

Pinking Irons—

See *Irons, Pinking.*

Pins—Escutcheon—

Brass .....60@60c&10%
Iron, list Nov. 11, '85.....60@60c&10%

Pipe, Cast Iron Soil—

Standard, 2-6 in.....50c&10
Extra Heavy, 2-6 in.....65%
Fittings 70%

Pipe, Merchant.

Carload Lots,

	Steel.		*Iron.*	
	Blk.	*Galv*	*Blk*	*Galv.*
⅛ and ¼-inch..	*71%*	*55%*	*69%*	*53%*
⅜ and ½-inch..	*75%*	*63%*	*73%*	*61%*
¾ to 6 inch....	*79%*	*69%*	*77½%*	*67½%*
7 to 12 inch....	*74%*	*59%*	*72½*	*57%*

Pipe, Sewer—

Jobbers' Prices—
Standard Pipe and Fittings, 2 to 24 in.
New England 67%
New York and New Jersey.....70%
Maryland, Delaware, East Penn.72%
West Penn and West Va.....75%
Virginia.....75%
Ohio, Michigan and Ky.....75%
Indiana.....77%
Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints ...	$7.00	$8 00
6 in., per 100 joints....	7.50	8.50
7 in., per 100 joints....	8.50	9.50

Planes and Plane Irons—Wood Planes—

Bench, First quality....40c&5@40c&10%
Bench, Second qual....50c&5@50c&10%
Molding.....33⅓&5@33⅓&10%
Bailey's (Stanley R. & L. Co) 5&10@25&10&10%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union.....60%

Iron Planes—

Bailey's (Stanley R. & L. Co).....25&10@25&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....50&10%
Union.....60%

Plane Irons—

Wood Bench Plane Irons.....30c&5@30c&10%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co...20&10@20&10&10%
Union.....30%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse.....₱ doz. $8.50

Plates—

Feltoe.....lb. 3¾@4c
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00.....50%

Pliers and Nippers—

Button Pliers.....75c&10@80%
Gas Burner, per doz., 5 in., $1.25@ $1.50; 6 in., $1.45@$1.50
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50@50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Improved Button.....60&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers, and Tools 40&10@40&10&10%
P., S. & W. Tinners Cutting Nippers.....30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—

Chapin Stephens Co.:
Plumbs and Levels .....30@30&10&10%
Chapin's Imp. Brass Cor .40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....50%
Disston's Pocket Levels.....50
C. E. Jennings & Co.'s Iron 33⅓
C. E. Jennings & Co.'s Iron, Adjustable, 40&7½%
Stanley R. & L. Co ...30&10@30&10&10%

Stanley's Duplex..... 20@20&10@10%
Woods' Extension..... 33⅓&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz. No. 1, $4.00; No. 2, $6.00; No. 3, $8.00; No. 4, $12.00..... 50%
Punch, Glaziers'—
Bulk and 1 lb. papers..... *lb. 8 c*
¼-lb. papers..... *lb. 8½c*
½-lb. papers..... *lb. 9½c*

Pokes, Animal—

Ft. Madison Hawkeye..... ₱ doz. $3.25
Ft. Madison Western..... ₱ doz. $4.00

Police Goods—

Manufacturers' Lists..... 25@25&5%
Tower's..... 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72..... 40%
Prestoline Paste..... 40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₱ doz..... $3.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans ₱ doz. 75¢
Black Jack Paste, ¼ lb cans, ₱ gro. $9.00
Black Kid Paste, 5 lb can..... each, $0.65
Ladd's Black Beauty, gr. $10.00..... 50%
Joseph Dixon's, ₱ gr. $5.75..... 10%
Dixon's Plumbago..... ₱ lb 8¢
Fireside..... ₱ gr. $2.50
Gem, ₱ gr. $4.50..... 10%
Japanese..... ₱ gr. $3.50
Jet Black..... ₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans..... ₱ doz. $1.50
Wynn's.
Black Silk, 5 lb pail..... each 70¢
Black Silk, ½ lb box..... ₱ doz. $1.00
Black Silk, 5 oz. box..... ₱ doz. $0.75
Black Silk, ½ pt. liq..... ₱ doz. $1.00

Poppers, Corn—

1 qt., Square..... *gro. $9.00*
1 qt., Round..... *gro. $10.00*
1½ qt., Square..... *gro. 11.00*
2 qt., Square..... *gro. 13.00*

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts, each..... $1.30

Potato Parers—

See *Parers, Potato.*

Pots— Glue—

Enameled..... 40%
Tinned..... 35%

Powder—

In Canisters:
Duck, 1 lb. each..... 45c
Fine Sporting, 1 lb. each..... 75c
Rifle, ½-lb. each..... 15c
Rifle, 1-lb. each..... 25c
King's Semi-Smokeless:
Keg (25 lb bulk)..... $6.50
Half Keg (12½ lb bulk)..... $3.50
Quarter Keg (6¼ lb bulk)..... $1.90
Case 24 (1 lb cans bulk)..... $8.50
Half case (1 lb cans bulk)..... $4.50

King's Smokeless:	Shot Gun	Rifle
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb cans blk)	7.25	8.75

Robin Hood Smokeless Shot Gun..50&20%

Presses—Fruit and Jelly—

Enterprise Mfg. Co..... 30@35%

Seal Presses—

Morrill's No. 1, per doz. $20.00..... 50%

Pruning Hooks and Shears—See *Shears.*

Pullers Cork—

Invincible Cork Puller..... $21.00

Pullers, Nail—

Cyclops..... 50%
Miller's Falls, No. 3, per doz. $12.00..... 33⅓&10%
Pearson No. 1, Cyclone Spike Puller, each $30.00..... 50%
Peitcan, ₱ doz. $9.00..... 40&10%
Scranton, Case Lots:
No. 2 B (large)..... $5.50
No. 3 B (small)..... $3.40
Smith & Hemenway Co.:
Diamond B, No. 2, case lots, ₱ doz $6.00
Diamond B, No. 3, case lots, ₱ doz $5.50
Giant, No. 1, ₱ doz. $15; No. 2, $10.50; No. 3, $15..... 40%

Pulleys—Single Wheel—

Inch	*2*	*2½*	*3*
Awning, doz	*$0.55*	*.85*	*1.15*

Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.15; 5 in., $1.40

Inch	*2*	*2½*	*2½*
Hot House, doz	*$0.70*	*.90*	*1.25*

Inch	*1¼*	*1½*	*1¾*	*2*
Screw, doz	*$0.16*	*.19*	*.23*	*.30*

Inch	*1¾*	*2*	*2¼*	*2½*
Side, doz	*$0.30*	*.40*	*.55*	*.63*
Inch	*1¾*	*1¾*	*2*	*2½*
Tackle, doz	*$0.30*	*.42*	*.58*	*1.00*

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction...60&10%
Electric Light..... 60%
Side, Anti-Friction..... 60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1¼ and 2 in..16@19c
Auger Mortise, no Face Plate, per doz. 1¼ and 2 in..... *16@19c*
Auger Mortise, with Face Plate, per doz., 1¼ and 2 in...... *16@19c*
Acme..... 1¼ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in. ₱ doz 50%
Grand Rapids All Steel Noiseless..... 50%
Ideal..... 70&10%
Niagara..... 1¼ in., 16¢; 2 in., 19¢
No. 26, Troy..... 1¼ in., 14½¢; 2 in., 16½¢
Star..... 1¼ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern..... *60@65&10%*
Pitcher Spout..... *80@80&10%*
Wood Pumps, Tubing, Etc..... *45@50%*
Barnes Dbl. Acting (low list)..... 50&10%
Barnes' Pitcher Spout..... 80%
Contractors' Rubber Diaphragm No. 2 B. & L. Block Co..... $16.00
Daisy Spray Pump..... ₱ doz. $7.20
Flint & Walling's, Fast Mail Hand, (Low List)..... 55%
Flint & Walling's Fast Mail (low list)... 55&55
Flint & Walling's Tight Top Pitcher..80%
National Specialty Mfg. Co., Measuring, $6.00..... 90%
Mechanical Sprayer..... $7.20
Myer's Pumps, low list..... 50%
Myers' Power Pumps..... 50%
Myers' Spray Pumps..... 50%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch..	*2*	*2¼*	*2½*	*2¾*
	$2.20	*2.50*	*2.75*	*3.00*

Inch..	*3*	*3¼*	*3½*	*3¾*	*4*
	$3.30	*3.60*	*3.85*	*4.10*	*4.40*

Plunger Cup Leathers—Per 100:

Inch	*2½*	*3*	*3½*	*4*
	$2.75	*3.85*	*5.00*	*6.00*

Punches—

Saddlers' or Drive, good..doz. 50@75c
Spring, single tube, good quality...
$1.75@2.00
Revolving (4 tubes)...doz. $3.50@3.75
Bemis & Call Co.'s Cast Steel Drive.....50%
Bemis & Call Co.'s Check..... 55%
Morrill's No. 1 (A.B.C.), ₱ doz., $15.00..50%
No. 2, ₱ doz. $22.50..... 50%
Hercules, each $7.50..... 50%
Niagara Hollow Punches..... 40%
Niagara Solid Punches..... 55&10%
Steel Screw, B & K. Mfg. Co..... 50%
Tinners' Hollow, P., S. & W. Co. 35@35&5%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44..... 60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door; Flange Screw Holes for Rd. Groove Wheels:

⅛	*⅜*	*¾ in.*
$1.70	*$2.10*	*$3.00 100 feet.*

Angular for Sq. Groove Wheels:

Small.	*Med.*	*Large.*	
$1.50	*1.90*	*2.60*	*100 feet.*

Sliding Door, Iron Painted..2¼@2¾c
Sliding Door, Wrought Brass, 1¼ in...... *lb.36c...30%*
Allith Mfg. Co.:
No. 1, Reliable Hanger Track, ₱ ft..5½¢
No. 2, Reliable Hanger Track, ₱ ft....7¢
Cronk's:
Double Braced Steel Rail, ₱ foot....8¢
O. N. T. Rail..... 2¼¢
Griffin's:
XXX per 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., $3.50.
Hinged Hanger, per 100 ft. 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ₱ 100 ft., 1 in., $3.70; 1¼ in. $4.40
O. N. T., ₱ 100 ft., 1 inch, $2.75; 1¼ inch, $3.50; 1½ inch $4.00.
Standard, 1¼ in., ₱ 100 ft..... 4.00
Lawrence Bros.:
₱ 100 ft. No. 201, $4.00; No. 202, $4.40
New York, 1 x 3-16 in., ₱ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail ₱ foot, 11¢..... 30%
None Better..... ₱ ft. 3½¢
Standard..... ₱ ft. 4¢
Myers' Stayon Track..... 60%
Richards Mfg. Co.:
Common 1 x 3-16, $2.75; 1¼ x 3-16, $3.25; 1¼ x 3 16, $4.50
Special Hinged Hanger Rail..... $4.40
Fire Door Track, ₱ ft. 2½ x ⅜, 15¢; 3½ x ⅜, 9¢.
Lag Screw Rail, No. 63..... 40%
Gauge Trolley Track, ₱ ft. No. 31, 10¢; No. 32, 15¢; No. 33, 24¢
Safety Door Hanger Co.'s Storm King Safety..... 60%
Safety Door Hanger Co.'s U.S. Standard 60%
Stowell's:
Cast Rail..... ₱ ft. 1½¢
Steel Rail, Plain..... 25%
Wrought Bracket, 1 3-16 in..... ₱ ft. 3¢
Wrought Bracket, 1¼x5-16..... ₱ ft. 7¢
Swett's Hylo, per ft. 11¢..... 60%
P. L. B. Steel Rail, ₱ 100 ft..... $3.00
No. 0, 1x3-16, ₱ 100 ft..... $2.75

Rakes—

Net Prices, Malleable Rakes:

10	*12*	*14*	*16-tooth*
Shank..$1.50	*1.60*	*1.75*	*1.85*
Socket..$1.65	*1.80*	*1.95*	*2.10*

Steel, Garden and Gravel, Aug. 1, '99 List..... *70%*
Weldless Steel..... *75&5%*
Malleable Iron, Garden..... *70&10%*
Lawn Rakes, Metal Head, per doz.
20 teeth..... *$3.25@3.50*
24 teeth..... *$3.50@3.75*
Fort Madison Red Head Lawn..... $3.25
Fort Madison Blue Head Lawn..... $2.70
Jackson Lawn, 20 and 30 teeth, ₱ doz., net, $4.25
Kohler's:
Lawn Queen, 20-tooth, ₱ doz..... $3.45
Lawn Queen, 24-tooth, ₱ doz..... $3.60
Paragon, 20 tooth, ₱ doz..... $2.75
Paragon, 24-tooth, ₱ doz..... $3.00
Steel Garden, 14-tooth, ₱ doz..... $2.98
Malleable Garden, 14-tooth, ₱ doz.. $1.75@2.00

Rasps, Horse—

Disston's..... 75%
Heller Bros..... 70&5@70&10@5%
McCaffrey's American Standard..... 60&10&5%
New Nicholson..... 50&10@75%
See also *Files.*

Razors—

Borastic..... 60%
Fox Razors, No. 42.. ₱ doz. $20.00 } 40%
Fox Razors, No. 44, ₱ doz, $20.00 } dis.
Fox Razors, No. 82, Platina, ₱ doz. $25.00
Red Devil..... 60%
Silberstein:
Carbo Magnetic..... $18.00
Griffon, No. 65..... $15.00
Griffon, No. 00..... $12.00
All other Razors..... 40%

Safety Razors—

Silberstein..... 40%

Reels— Fishing—

Henshaw:
M 6, Q 6, A 6, B 6, M 9½, M 18, Q 16, A 16, B 16, 4008, Rubber Populo, Nickeled Populo..... 20%
Aluminum, German Silver, Bronze..25%
1240 N, 124 N..... 20%
3004 N, 06 N, 6 RM, G 9..... 25%
4 N, 5 PN, 24 N, 26 PN..... 20%
3004 P..... 33⅓%
3004 PN..... 33⅓%
0024 N..... 33⅓%
02084 N..... 33⅓%
002904 PN..... 33⅓%
802 N..... 33⅓%
986 PN, 2904 N, 974 PN..... 25%
5009 PN, 5009 N..... 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR..... 25%
304 P, 304 PN, 00304 P, 00304 PN..33⅓%

Registers—*List July 1, 1903.*

Black Jap..... } *75¢ 100@60*
White Jap..... }
Bronzed..... }
Nickel Plated..... }
Electro Plated..... }

Revolvers—

Single Action..... *85@90c*
Double Act n, except 44 cal...... *$1.90*
Double Action, 44 caliber..... *$2.05*
Automatic..... *$3.60*
Hammerless..... *$4.10*
Note.—Jobbers frequently cut the above prices of manufacturers for small trade.

Riddles, Hardware Grade

16 in., per doz..... *$2.25@$2.50*
17 in., per doz..... *$2.50@$2.75*
18 in., per doz..... *$2.75@$3.00*

Rings and Rangers—Bull Rings—

2	*2½*	*3 Inch*
Steel..$0.70	*0.75*	*0.80 doz.*
Copper..1.00	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ₱ doz., $1.25; 2½ in, $1.50; 3 in., $1.75.

Hog Rings and Rangers—

Hill's Rings...gro. boxes, $4.00@4.25
Hill's Rangers, Gray Iron, doz. 50@55c
Hill's Rangers, Mal. Iron, doz. 70@75c
Blair's Rings...per gro. $4.75@5.00
Blair's Rangers...per doz. $0.60@.65
Brown's Rings...per gro. $5.00@5.25
Brown's Rangers..per doz. $0.65@.70

Rivets and Burrs—

Copper..... *60¢@60&10%*
Iron or Steel..... *75&5@75&10¢*

Rollers—

Acme, Stowell's Anti-Friction..... 50%
Barn Door, Sargent's list..... 60%
Cronk's Stay..... 7½¢
Cronk's Brinkerhoff..... 90¢
Lane's Stay..... 40%
Richards' Stay:
Handy Adj. and Reversible No. 53....50%
O. K. Adj. and Reversible, No. 58....50%
Lag Screw, Nos. 55 and 57..... 50%
Fire Door, No. 50..... 40%
Favorite, No. 54..... 40%
Stowell's Barn Door Stay..... ₱ doz. $1.00
Swett's Anti Friction..... 50%
Screw and Spike Stay..... ₱ doz 65¢
Hinge Adjustable Stay..... ₱ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger:
Mixed..... *lb. 10 @11 c*
Pure..... *lb. @11½c*
Manila, Hay, Hide and Bale Ropes, Medium and Coarse..... *lb. 10 @11½c*
Sisal, 7-16 in. diam. and larger:
Mixed..... *lb. 7½c*
Pure..... *lb. 9 c*
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed..... *lb. 7½c*
Pure..... *lb. 9 c*
Sisal, Tarred, Medium Lath Yarn:
Mixed..... *lb. 7 c*
Pure..... *lb. 8½c*
Cotton Rope: —Lb.—
Best..... *¼-in. and larger*..... *15½c*
Medium, ¼ in. and larger..... *14½c*
Common, ¼-in. and larger..... *10½c*
Jute Rope:
Thread No. 1, ¼-in. and up, lb. 6 c
Thread No. 2, ¼-in. and up, lb. 5½c
Wool Twine..... *lb. 6½c*
Old Colony Manila Transmission Rope, ₱ ft 17½¢

Wire Rope—

Galvanized..... *47½&5%*
Plain..... *55&5%*

Ropes, Hammocks—

Covert Mfg. Co.:
Jute..... 40&5&5%
Steel..... 30%
Covert Saddlery Works..... 60&5%

Rules—

Boxwood..... *60&10¢10%*
Ivory..... *35¢10@35¢10¢5%*
Chapin-Stephens Co.:
Boxwood..... 60@60&10%
Ivory..... 35@35&10&10%
Miscellaneous..... 50@50&10&10%
Combination..... 55@55&10%
Stationers'..... 10@10&10%
Lufkin's Steel..... 50&10%
Lufkin's Lumber..... 70%
Stanley R. & L. Co.:
Boxwood..... 60@60&10%
Ivory..... 35@35&10&10%
Upson Nut Co.:
Boxwood..... 60@60&10%
Ivory..... 35&10@35&10&10%

Sash Balances—See *Balance Sash.*

Sash Locks—See *Locks, Sash*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins:
Circular..... 50%
Band..... 50&10@60%
Cross Cuts..... 35&5%
Mulay, Mill and Drag..... 50%
One-Man Saw..... 40%
Wood Saws..... 40%
Hand, Compass, &c..... 40%
Chapin-Stephens Co.:
Turning Saws and Frames....30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws..... 30&10&5%
Disston's:
Circular, Solid and Inserted Tooth..50%
Band, 2 to 14 in. wide..... 60%
Band, ¼ to 1¾..... 60%
Crosscuts..... 50%
Narrow Crosscuts..... 55%
Mulay, Mill and Drag..... 50%
Framed Woodsaws..... 35%
Woodsaw Blades..... 35%
Woodsaw Rods..... 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 79, 77, 8..... 25%
Hand Saws, Nos 7, 107, 107½, 8, 1, O, 00, Combination..... 30%
Compass, Keyhole, &c..... 25%
Butcher Saws and Blades..... 35%
C. E. Jennings & Co.'s.:
Back Saws..... 25%
Butcher Saws..... 30%
Compass and Key Hole Saws..... 35&5%
Framed Wood Saws..... 30%
Hand Saws..... 20&2½%
Wood Saw Blades..... 35%
Millers Falls:
Butcher Saws..... 15&10%
Star Saw Blades..... 15&10%
Pence & Richardson's Hand Saws..... 30%
Simonds':
Circular Saws..... 50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts..... 40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws..... 50%
Back Saws..... 25&25&7½%
Butcher Saws..... 35&3&7½%
Hand Saws..... 25&2½&7½%
Hand Saws, Bay State Brand..... 45%
Compass, Keyhole, &c..... 25&2½&7½%
Wood Saws..... 35&3&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws..... 40&10@50%
Butcher Saws Blades..... 35&40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws..... 50%

Hack Saws—

Atkins' Hack Saw Blades A A A..... 25%
Disston:
Concave Blades..... 25%
Keystone..... 40%
Hack Saw Frames..... 30%
Fitchburg File Works, The Best..... 25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180..... 40&7½%
Hack Saws, Nos. 175, 180, complete. 40&7½%
Goodell's Hack Saw Blades..... 40%
Griffin's Hack Saw Frames.. 35&5&10%
Griffin's Hack Saw Blades..... 35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades..... 35%
Diamond Hack Saw Frames..... 50%
Star Hack Saws and Blades..... 15&10%
Sterling Hack Saw Blades..... 35%
Sterling Hack Saw Frames..... 30& 0&5%

Scroll—

Barnes' No. 7, $15..... 25%
Barnes' Scroll Saw Blades..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20..... 20%
Lester, complete, $10.00..... 15&10%
Rogers, complete, $4.00..... 15&10%

Scalers, Fish—

Covert's Saddlery Works..... 60&10%

Scales—

Family, Turnbull's..... *50@50&10%*
Counter:
Hatch, Platform, ½ oz to 8 lbs. doz $5.50
Two Platforms, ½ oz to 8 lbs., doz. $16
Union Platform, Plain..$1.70@1.90
Union Platform, Striped $1.85@2.15
Chatillon's:
Eureka..... 25%
Favorite..... 40%
Grocers' Trip Scales..... 50%
Chicago Scale Co.:
The "Little Detective," 25 lbs..... 50%
Union or Family No. 2..... 60%
Portable Platform (reduced list)..... 50%
Wagon or Stock (reduced list)..... 25@35%
"The Standard" Portables..... 50%
"The Standard" R. R. and Wagon..... 50%

Scrapers—

Box, 1 Handle..... *doz. $2.00@2.25*
Box, 2 Handle..... *doz. $2.60@2.85*
Ship Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.) $6.00..... 30@30&10%
Chapin-Stephens Co., Box..... 50@50&10%

Screens, Window, and Frames—

Flyer Pattern Screens..60&5@60&5&2½%
Maine Screen Frames..... 40&10&5%
Perfection Screens..... 60&5@60&5&2½%
Phillips' Screen Frames..60&5@60&5&2½%
See also *Doors.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in.. $2.50@2.75 :
1¼, $3.00@3.25; 1½, $3.50@3.75
Bench, Wood, Beech....doz. 30@30&5
Hand, Wood.....30@30&5%
E. Bliss Mfg. Co., Hand.....30@30&10%
Chapin-Stephens Co., Hand.....30@30&10%
Ohio Tool Co., Bench and Hand.....30%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, 99.....80@80&10%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....75&10&5@80&5%
Hand Rail, list Jan. 1, '81..70&10@75%

Jack Screws—

Standard List.....75&10@80&5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50@50&5%
Sargent.....70&10%
Swett Iron Works.....75&10@80&5%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.50@50&10%
Flat or Round Head, Brass50@50&10%

Set and Cap—

Set (Iron or Steel).....75% } *Extra*
Sq. Hd. Cap.....70% } *10&5*
Hex. Hd. Cap.....70% } *often*
Rd. or Fillister Hd. Cap 65% } *given.*

Wood—

List July 23, 1903.
Manufacturers' printed discounts :
Flat Head, Iron.....87½&10@...%
Round Head, Iron.....85&10@...%
Flat Head, Brass.....85&10@...%
Round Head, Brass.....80&10@...%
Flat Head, Bronze.....77½&10@...%
Round Head, Bronze.....75&10@...%
Drive Screws.....87½&10%

Scroll Saws—See *Saws, Scroll.*

Scythes— *Per doz.*

Prices announced for next season :
Clipper Pattern, Grass.....$6.30
Full Polished, Clipper.....$6.75
Grain.....$8.00
Clipper, Grain.....$8.25
Weed and Bush.....$6.25

Seeders— Raisin—

Enterprise.....25@30%

Sets— Awl and Tool—

Brad Awl and Tool Sets :
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools .. doz. $2.50@3.00
Aiken's Sets, Awl and Tools :
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H'dls...Nos. 1, $12; 2, $18; 3, $13; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders.....30%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18.....15&10%
Stanley's Excelsior :
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....30@30&10&10%

Garden Tool Sets—

Ft., Mad'on, Three Pieces, Hoe, Rake and Shovel.....₱ doz. sets.....$9.00

Nail—

Square.....per gro. $2.25@2.50
Round, Blk. and Pol., assorted..... gro. $1.80@2.00
Octagon.....gro. $ 5.50@5.75
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Mayhew's.....per gro. $9.00
Snell's Cannon's Diamond Pt ₱ ro $7.20
Snell's Corrugated, Cup Pt. per gro. $7.20
Snell's Knurled, Cup Pt....per gro $7.20
Springfield Mach. Screw Co.: Diamond Knurled, Cup Pt., per gro. $7.50

Rivet—

Regular list.....75@75&10%

Saw—

Aiken's:
Genuine.....50&10%
Imitation.....50&10%
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Plate.....20%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $30.63.....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.84.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal, Cross Cut.....₱ doz. $8.50
Royal, Hand.....₱ doz. $5.0
Taintor Positive.....₱ doz $6.75

Shaving—

Fox Shaving Sets, No. 30, per doz, $24.00 net

Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%

Shaves, Spoke—

Iron.....doz. $1.00@1.15
Wood.....doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.).....30@30&10&10%
Chapin-Stephens Co.....40@30&10&10%
Goodell's, ₱ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap.....70@70&10%
" Nickel.....60@60&10%
Fair qual. Jap.....80@80&5%
" Nickel.....75@75&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....10%
Wilkinson's Hedge.....1900 list 45%
Wilkinson's Branch, Lawn and Border40%
Wilkinson's Sheep.....1900 list. 50%

Tinners' Snips—

Steel Blades.....50&5@20&10
Steel Laid Blades.....40&10@20%
Forged Handles, Steel Blades, Berlin.....40@40&10%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 inch.....50%
Niagara Snips.....40%
P., S & W. Co.....20%

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25%
Disston's Pruning Hook, ₱ doz. $12.00.....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades.....40@40&5%
Orange Shears.....50&10@50&20%
Grape.....40@10@50%
Tree Pruners.....75%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 70&10%
Reading.....60%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....50%

Sliding Shutter—

Reading list.....45&20%
R. & E. list.....33⅓%
Sargent's list.....50&10%

Shells—Shells, Empty—

Brass Shells, Empty :
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.....65&5%
Paper Shells, Empty :
Acme, Ideal, Leader, New Rapid, Magic 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge.....30%
Climax, Union, League, New Rival 10 and 12 gauge.....35%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....30&10%

Shells, Loaded—

Loaded with Black Powder.....40%
Loaded with Smokeless Powder, medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg:
Iron.....per keg $4.00
Steel.....per keg 3.75
Burden's, all sizes ₱ keg.....$3.90

Shot—

Drop, up to B, 25-lb. bag.....$1.60
Drop, B and larger, per 25-lb. bag $1.85
Buck, 25-lb. bag.....$1.85
Chilled, 25-lb. bag.....$1.85

Shovels and Spades—

Association List, Nov. 15, 1902....40%

Sieves and Sifters—

Hunter's Imitation..gro. $10.50@11.00
Buffalo Metallic Mined. S. S. Co., ₱ gr.:
14&16 16&18 18&20
$13.20 $13.50 $14.40
Shaker Barler's Pat.) Flour Sifters.. ₱ doz., $2.00.....40%

Sieves, Seamless Metallic—

Per dozen				
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz.....$0.90@0.95
Mesh 20, Nested, doz.....1.00@1.05
Mesh 24, Nested, doz.....1.30@1.40

Sinks—

Cast Iron—

Standard list.....60@60&10%
NOTE.—*There is not entire uniformity lists used by jobbers.*

Skeins, Wagon—

Cast Iron.....8@8&10%
Steel.....40@40&10%

Slates, School—

Factory Shipments.
"D" Slates.....50@50&10%
Eureka, Unexcelled Noiseless..60& 5 tens
Victor A, Noiseless.....60&4 tens&5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German.....40@40&10%
Covert Mfg. Co.:
Leroy.....30&5&2%
High Grade.....45%
Jockey.....30&10%
Trojan.....45%
Yankee.....30&5&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
Oneida Community Solid Swivel.....60%
Sargent's Patent Guarded.....66⅔&10%

Snaths—

Scythe.....45%

Snips, Tinners'—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality.....50&10@60&5%
Cheap.....40@60&10%
International Silver Co.
1847 Rogers Bros. and Rogers & Hamilton.....40&10%
Rogers & Bro., William Rogers Eagle Brand.....50&10%
Anchor, Rogers Brand..60%
Wm. Rogers & Son.....60&10%

Miscellaneous—

German Silver.....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—

Teas.....per gro. 45@50c
Tables.....per gro. 90c@$1.00

Springs—Door—

Chicago (Coil).....40&10%
Gem (Coil).....20%
Pullman (Coil).....20%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....₱ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.

	Per Lb.
1¼ in. and Wider :	
Black	*4¼c*
Half Bright	*4¼c*
Bright	*4¾c*
Painted Seat Springs :	
1½ x 22 x 26, per pr.	*42c*
1½ x 3 x 28 per pr.	*70c*

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... } *Last Jan. 5, 1900.*
Steel and Iron... } *70&10@75&10%*
Rosewood Hdl Try Square and T-Bevels.....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels.....70%
Winterbottom's Try and Miter.....40&10@40&10&10%

Squeezers—Lemon—

Wood, Common, gro., No. 0, $5.25 @$5.50 : No. 1, $6.25@$6.50.
Wood, Porcelain Lined.
Cheap.....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined.....doz. $1.75

Staples—

Barbed Blind.....lb. 6@6½c
Electricians', Association list..... 80&10&10&10%
Fence Staples, Plain $2.25; Galvanized.....$2.55
Poultry Netting. Staples....per lb.. 5½@5½c
Grand Crossing Tack Co.'s list....80&10%

Steels, Butchers'—

Dick's.....30%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%

Steelyards.....30@30&10%

Stocks and Dies—

Blacksmiths'.....50@50&10%
Curtis Reversible Ratchet Die Stock.25%
Derby Screw Plates.....25%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $8.00 per gro., 12 inch, $10.80
Norton Emery Scythe Stones:
Less than gross lots.....₱ gro. $9.00
One gross or more.....₱ gro. $7.20
Lots of 10 gross or more.....₱ gro $6.00
Pike Mfg. Co. 1901 list:
Black Diamond S. S.....₱ gro. $12.00
Lamoille S. S.....₱ gro. $11.00
White Mountain S. S.....₱ gro. $9.00
Green Mountain S. S.....₱ gro. $6.00
Extra Indian Pond S. S.....₱ gro. $7.50
No. 1 Indian Pond S. S..₱ gro. $7.00
No. 2 Indian Pond S. S..₱ gro. $4.50
Leader Red End S. S....₱ gro $6.50
Emery and Corundum, 10 inch..₱ gro.....$9.00
Pure Corundum, 10 inch. ₱ gro $ 2
Crescent.....$7.00
Emery Scythe Rifles, Two Coat $8
Emery Scythe Rifles, Three Coat, $10
Emery Scythe Rifles, Four Coat, $12
Balance of 1904 list 33⅓%.

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.....30%
Gem Corundum Axe, Single or Double Grit.....35%
Gem Corundum Slips.....35%
Gem Corundum Razor Hones.....30%
Pike Mfg. Co. 1901 list: ₱ lb.
Arkansas Stone, No. 1, 3 to 5¼ in. $2.90
Arkansas Stone, No. 1, 5¼ to 8 in. $3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita 4 to 8 in.....60¢
Rosy Red Washita, 4 to 8 in.....60¢
Washita Stone, Extra, 4 to 8 in..50¢
Washita Stone, No. 1, 4 to 8 in..40¢
Washita Stone, No. 2, 4 to 8 in..30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slip, No. 2.....40¢
India Oil Stones (entire list).....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Single or Double Grit...33⅓%
Quickcut Emery Bubbing Brick.33⅓%

33⅓&5%

Hindostan No. 1, Regular....₱ lb 8¢
Hindostan No. 1 Small.....₱ lb 10¢
Axe Stones (all kinds).....
Turkey Oil Stones, ex. 5 tos in. ₱ lb 80¢
Queer Creek Stones, 4 to 5 in.....20¢
Queer Creek Slips.....40¢
Sand Stone.....6¢
Belgian, German and Swaty Razor Hones.....50%
Natural Grit Carving Knife Hones, ₱ doz.....$3.00
Quick Edge Pocket Knife Hones, ₱ doz.....$2.50
Mounted Kitchen Sand Stone, ₱ doz.....$1.50

33⅓&5%

40%

Stoners—Cherry—

Enterprise.....25@30%

Stoppers, Bottle—

Victor Bottle Stoppers.....₱ gro. $9.00

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%

Door—

Chapin-Stephens Co.....60@60&10%

Plane—

Chapin-Stephens Co.....20%

Straps—Box—

Cary's Universal, case lots....20&10&10%

Hame—

Covert's Saddlery Works.....60&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@60c
Socket.....doz. $1.75
Excelsior Stretcher and Tack Hammer Combined, per doz, $6.....20%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, 1902.....30&5%

Sweepers, Carpet—

National Sweeper Co.:	Per doz.
Auditorium, Roller Bearing (26 in case), Nickel	$54.00
Mammoth, Roller Bearing (30 in case), Nickel	$60.00
Marion, Roller Bearing, regular finishes, full Nickel	$24.00
Marion Queen, Roller Bearing, full Nickel	$24.00
Monarch, Roller Bearing, Nickel	$22.00
Monarch, Roller Bearing, Japanned	$20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel	$36.00
Monarch Extra, Roller Bearing, (17-inch case), Nickel	$36.00
Monarch Extra, Roller Bearing (17-inch case), Japanned	$33.00
National Queen, Fancy Veneers	$27.00
Perpetual, Regular Bearings, Nickel	$20.00
Perpetual, Regular Bearings, Japanned	$18.00

NOTE.—*Rebates:* 30c *per dozen on three-dozen lots;* $1 *per dozen on five-dozen lots;* $2 *per dozen on ten-dozen lots;* $2.50 *per dozen on twenty-five-dozen lots.*

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks.....90&30&10@....%
American Cut Tacks....90&25@....%
Swedes Cut Tacks. 90&30&10&5@....%
Swedes Upholsterers' Tacks..... 90&45&10&5@....%
Gimp Tacks.....90&45&10@....%
Lace Tacks.....90&45&10@....%
Trimmers' Tacks..90&50&10&5@....%
Looking Glass Tacks..70&10&5@....%
Bill Posters' and Railroad Tacks... 90&45&20&10....%
Hungarian Nails....80&30&5@....%
Common and Patent Brads..... 80&10&5@....%
Trunk and Clout Nails..80&10@....%

NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Pointed Tacks 90 & 6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.. 50&10&10%

See also *Nails, Wire.*

Tanks, Oil—

	Each.
Emerald, S. S. & Co.	30-gal $3.40
Emerald, S. S. & Co.	50-gal., $4.25
Queen City S. S. & Co., 30-gal	$3.65
Queen City S. S. & Co., 50-gal	$4.50

Tapes, Measuring—

American Asses' Skin.....40&10@50%
Patent Leather.....25@30&25%
Steel.....40@40&10%
Chesterman's.....25@25&25%
Eddy Asses' Skin.....40&10@50%
Eddy Patent Leather.....25@30&5%
Eddy Steel.....40@40&10%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1903.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30&5%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝ inch and larger, per 100 lbs...$3.00

Thermometers—

Tin Case.....30&10@30&10&5%

Ties, Bale—Steel Wire.

Single Loop.....30&2½
Monitor, Cross Head, Etc.....70%

Brick Ties—

Niagara Brick Ties.....25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Planed, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

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Tools—Coopers'—
L. & I. J. White ..... 90@20&5%

Hay—
Myers' Hay Tools 50%
Stowell's Hay Carriers 5%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 5%

Saw—
Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—
L. & I. J. White 25%

Transom Lifters—
See *Lifters, Transom.*

Traps—Fly—
Balloon, Globe or Acme ..... doz. $1.15@1.25 ; gro. $11.50@12.00
Harper, Champion or Paragon ..... doz. $1.25@1.40 ; gro. $13.00@13 50

Game—
Oneida Pattern ..... 75&10@75&10&5%
Newhouse ..... 45@45&5%
Hawley & Norton ..... 65@65&5%
Victor (Oneida Pattern) ..... 75@75&5%
O.C. Jump (Blake Pattern) 60&5@60&10%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes ..... 8½@9c
Mouse, Round or Square Wire ..... doz. 85@90c
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½ ; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 7 $3.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25

Trimmers. Spoke—
Wood's E I 50%

Trowels—
Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ..... ₱ gro. $4.80
Kohler's Steel Garden Trowels, 6 in ..... ₱ gro. $6.00
Never-Break Steel Garden Trowels ..... gro. $6.00
Rose Brick and Plastering ..... 25&5%
Woodrough & McFarlin, Plastering 25%

Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern ..... 50&10%
Western Pattern ..... 60&10%
Handy Trucks ..... per doz. $16.00
Grocery ..... per doz. $15.00
Daisy Stove Trucks, improved pattern ₱ doz. $18.50
Model Stove Trucks ..... ₱ doz. $18.50

Tubs, Wash—No. 1 2 3
Galvanized, per doz. $4.75 5.25 6.00
Galvanized Wash Tubs (S. S. & Co.):
No. 1 2 3 10 20 30
Per doz., net $5.70 6.50 7.20 6.30 7.20 8.10

Twine—Miscellaneous—
Flax Twine— BC. B.
No. 9, ¼ and ⅛-lb. Balls ..22c@21c
No. 12, ¼ and ⅛ lb. balls ..18c@20c
No. 18, ¼ and ⅛-lb. Balls ..16c@18c
No. 24, ¼ and ⅛-lb. Balls ..15c@18c
No. 36, ¼ and ⅛-lb. Balls ..15c@17c
Chalk Line, Cotton, ⅛-lb Balls 8c
Cotton Mops, 6, 9, 12 and 15 lb. to doz ..... ₱ @11c
Cotton Wrapping 3 Balls to lb ..... according to quality ..13½c@20c
American 2-Ply Hemp, ¼ and ⅛-lb. Balls ..... 13@14c
American 3 Ply Hemp, 1-lb. Balls ..... 13@14c
India 2-Ply Hemp, ¼ and ⅛-lb. Balls (Spring Twine) 8c
India 3-Ply Hemp, 1-lb. Balls ..... 7@9c
India 3-Ply Hemp, 1¼-lb. Balls, 6@7c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ..... 9@10c
Mason Line, Linen, ½-lb. Balls 16c
No. 2½ Mattress, ¼ and ½-lb Balls 37c
Wool, 3 to 6 ply ..... 5¾@6c

Vises—
Solid Box ..... 50&10@60%

Parallel—
Athol Machine Co :
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw Co 40%
Emmert Universal :
Pattern Makers' No. 1 $15.00; No. 2, $12.50; No. 3, $10.00.
Machinist and Tool Makers' No. 4 $12.50; No. 5, $7.00 ; No. 6, $10.00 ; No. 10, $21.50.
Jewelers' No. 7.. ..... $4.00
Fisher & Norris Double Screw ..... 15&10%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co ..... 20@30%
Merrill's 20%
Miller's Falls ..... 60&10%
Massey Vise Co.:
Clincher 40%
Perfect 30%
Lightning Grip 30%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Sargent's 40%
Smith & Hemenway Co.:
Machinists 40%
Jewelers 33⅓%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

Saw Filers'—
Disston's D 8 Clamp and Guide, ₱ doz. $30 ..... 95%
Perfection Saw Clamps, ₱ doz. $5 00
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 45&50%

Wood Workers'—
Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00 ; 9 in., $7.00 ; 14 in., $8.00.

Miscellaneous—
Bignall & Keeler Combination Pipe Vise ..... 60&10%
Hollands' Combination Pipe ..... 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
187 Series ..... 60&5%
No. 870 ..... 40%

Wads—Price Per M.
B. E., 11 up	60c
B. E., 9 and 10	70c
B. E., 8	80c
B. E., 7	90c
P. E., 11 up	$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.50
Ely's B. E., 11 and larger	$1.70@1.75
Ely's P. E., 12 to 20	$3.00@3.25

Dis. 15%

Ware, Hollow—Cast Iron, Hollow—
Stove Hollow Ware :
Enameled ..... 55&10@60 & 5%
Ground ..... 60&10@65%
Plain or Unground ..... 65&10@70%
Country Holloware per 100 lbs., $2 50
White Enameled Ware :
Maslin Kettles 70%
Covered Ware :
Tinned and Turned 40%
Enameled 50%
See also Pots Glue.

Enameled—
Agate Nickel Steel Ware ..... 50&20
Agate Nickel Steel Ware, Specials ..... 60&15%
Iron Clad Ware ..... 70&10%
Lava, Enameled ..... 40&10%
Never Break Enameled 50%

Tea Kettles—
Galvanized Tea Kettles :

Inch	6	7	8	9
Each	55c	50c	55c	65c

Steel Hollow Ware.
Avery Spiders & Griddles ..... 65@65&5%
Avery Kettles 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles ..... 65&5%
Never Break Kettles 60%
Solid Steel Spiders & Griddles ..... 65&5%
Solid Steel Kettles 60%

Warmers, Foot—
Pike Mfg. Co., Soapstone ..... 40@40&10%

Washboards—
Solid Zinc: ₱ doz
Crescent, family size, bent frame $3.00
Red Star, family size, stationary protector $3.00
Double Zinc Surface :
Saginaw Globe, family size, stationary protector $2.65
Cable Cross, family size, stationary protector $2.90
Single Zinc Surface :
Naiad, familysize, open back perforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.25
Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00
Glass Surface:
Glass King, Single Surface, open back, $3
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.00

Washers—Leather, Axle—
Solid ..... 80&10@80&10&10%
Patent ..... 90@90&5%
Coil:

	⅛	1	1¼	1¾ Inch.
	11c	12c	13c	14c per box

Iron or Steel—
Size bolt .... 5-16 ⅜ ½ ⅝ ¾
Washers $3.00 4.10 2.80 2.00 2.40
In lots less than one keg add ½c per lb., 5-lb. boxes add ½c to list.

Cast Washers—
Over ½ inch, barrel lots, per lb 1¾@2c

Wedges—
Oil Finish ..... lb. 2.25@2.30c

Weights—Hitching—
Covert Mfg. Co ..... 40&2%
Covert's Saddlery Works ..... 60&10%

Sash—
Per ton, f.o.b. factory :
Eastern District $23.00
Western, Central and Southern Districts market unsettled, prices ranging from $17.50@19.00

Wheels, Well—
8-in., $1.50@1.55; 10-in., $1.65@1.70; 12-in., $2.25@2.35; 14-in., $3.50@3.50

Wire and Wire Goods—
Bright and Annealed :

6 to 9	80&5@80&7½%
10 to 18	80@80&5%
19 to 26	80&10@80&10&5%
27 to 36	80&5@80&10%
Galvanized :	
6 to 9	77½@77½&5%
10 to 14	77½@77½&5%
15 to 18	75&5@75&10%
19 to 26	75&10@75&10%
27 to 36	72½&5@72&7½%
Coppered :	
6 to 9	77½@77½&5%
10 to 14	77½@77½&7½%
15 to 18	75&10@75&10&2½
19 to 26	75&10&5@80%
27 to 36	75@75&5%
Tinned :	
6 to 14	77½@77½&7½%
15 to 18	75&5@75&10%
Annealed, Steel and Tinned, on Spools	75&10@75&10&5%
Brass & Copper on Spools	60&5@60&10&5%
Brass, list Feb. 26, '96	30%
Copper, list Feb. 26, '96	15%
Cast Steel Wire	50%
Wire Clothes Line, see *Lines.*	
Wire Picture Cord, see *Cord.*	

Bright Wire Goods—
List June 24, 1903 ..... 90@10&10@10&10@..%

Wire Cloth and Netting—
Galvanized Wire Netting ..... 80&10@80&10&5%
Painted Screen Cloth, per 100 ft. $1.25
Standard Galv. Hardware Grade :
Nos. 2, 2½ and 3 Mesh, sq. ft 3c
Nos. 4 and 5 Mesh, sq. ft 3½c
No. 6 Mesh, sq ft 3½c
No. 8 Mesh, sq ft 4c

Wire Barb—See *Trade Report.*

Wrenches—
Agricultural ..... 75&10@75&10&10%
Alligator or Crocodile ..... 70&10@70%
Baxter Pat'rn S Wrenches ..... 70&5@70&10%
Drop Forged S ..... 45@45&5%
Acme ..... 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Brigg's Pattern 40%
Combination Black ..... 40&5%
Combination Bright 40%
Merrick's Pattern 50%
Boardman's 33⅓%
Coes' Genuine Knife Hdl ..... 40&10&5&5%
Coes' Genuine Steel Hdl ..... 40&10&5&5%
Coes' Genuine Key Model ..... 40&10&5&5%
Coes' "Mechanics' ..... 40&10&10&5&5%
Donohue's Engineer ..... 40&10%
Eagle ..... 50&10%
Elgin Wrenches 40%
Elgin Monkey Wrench Pipe Jaws 33⅓%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots ..... 50&5%
Less than case lots 50%
Improved Pipe (W. & B.) 60%
Solid Handles, P.S. & W ..... 50&50&5%
Stillson 65%
Vulcan Chain 50%

Wrought Goods—
Staples, Hooks, &c., list March 17 '02 ..... 90@90&10%

Yokes Neck—
Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters' .. list not

Zinc—
Sheet ..... per 100 lbs. $6 35@6 60

PAINTS, OILS AND COLORS.

White Lead, Zinc, &c.
Lead, English white, in Oil ..... 9½@ 9¼
Lead, American White, in Oil:
Lots of 500 ℔ or over ..... @ 6¼
Lots less than 500 ℔ ..... @ 7
In Barrels ..... @ 6
Lead, White, in oil, 25 ℔ tin pails, add to keg price ..... @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price ..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price ..... @ 1¼
Lead, American, Terms: For lots 12 tons and over ¼¢ rebate ; and 2% for cash if paid in 15 days from date of invoice ; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice; for lots of less than 500 lbs. net.
Lead White, Dry in bbls ..... @ 6
Zinc, American, dry ..... ₱ ℔ 4½@ 4¾
Zinc, French:
Paris, Red Seal, dry 7¼
Paris, Green Seal, dry 9½
Antwerp Red Seal, dry 6½
Antwerp, Green seal, dry 8¼
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over ..... 11¼@11¾
Lots of less than 1 ton ..... 11¾@12
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over ..... 10 @10½
Lots of less than 1 ton ..... 10¼@10¾
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon ..... ₱ ℔ 5 @10
Black, Drop, Amer ..... 4 @ 6
Black, Drop, Eng ..... 5 @15
Black, Ivory ..... 16 @20
Lamp, Com ..... 4½@ 6
Blue, Celestial ..... ₱ ℔ 4 @ 6
Blue, Chinese ..... 30 @ 32
Blue, Prussian ..... 27 @30
Blue, Ultramarine ..... 4½@15
Brown, Spanish ..... 1½@ 1
Carmine, No. 40 ..... ₱ ℔ $3.60@4.00
Green, Chrome, ordinary ..... 3½@ 6.
Green, Chrome, pure ..... 17 @25
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6¼
Lots less than 500 ℔ ..... @ 7
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6¼
Lots less than 500 ℔ ..... @ 7
Ocher, American ..... ₱ ton $8.50@16.00
Orcher, American Golden ..... 2½ @ 3½
Orcher, French ..... 1¾ @ 2½
Orcner, Foreign Golden ..... 3 @ 4
Orange Mineral, English ..... ₱ ℔ 8¼@10¼
Orange Mineral, French ..... 10½@11¼
Orange Mineral, German ..... 7 @10
Orange Mineral, American ..... 8 @ 8½
Red, Indian, English ..... 4½@ 8½
Red, Indian, American ..... 3 @ 3½
Red, Turkey, English ..... 4 @10
Red, Tuscan, English ..... 7 @10
Red, Venetian, Amer. ..... ₱ 100 ℔ $1.50@1.25
Red Venetian, English ..... ₱ 100 ℔ 1.15@1 75
Sienna, Italian, Burnt and Powdered ..... ₱ ℔ 3 @ 9½
Sienna, Ital., Raw, Powd ..... 3 @ 6½
Sienna, American, Raw ..... 1½@ 2
Sienna, American, Burnt and Powdered ..... ₱ ℔ 1½@ 2
Tale, French ..... ₱ ℔ 1 @ 1½
Tale, American ..... 75 @1.25
Terra Alba, French, ₱ 100 ℔ ..... 90 @1.00
Terra Alba, English ..... 90 @1.00
Terra Alba, American No. 1 ..... 60 @70
Terra Alba, American No. 2 ..... 45 @50
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. ₱ ℔ 2½@ 3½
Umber, Bnt. Amer ..... 1½@ 2
Umber, Raw, Amer ..... 1½@ 2
Yellow, Chrome ..... 11 @14
Vermilion, American Lead ..... 10 @25
Vermilion, Quicksilver, bulk ..... @65
Vermilion, Quicksilver, bags ..... @66
Vermilion, English, Import ..... 75 @80
Vermilion, Chinese ..... @0.90@1.00

Colors in Oil.
Black, Lampblack ..... 12 @14
Blue, Chinese ..... 36 @46
Blue, Prussian ..... 32 @36
Blue, Ultramarine ..... 13 @16
Brown, Vandyke ..... 11 @14
Green, Chrome ..... 10 @15
Green, Paris ..... @24
Sienna, Raw ..... 12 @15
Sienna, Burnt ..... 12 @15
Umber, Raw ..... 11 @14
Umber, Burnt ..... 11 @14

Miscellaneous.
Barytes, White Foreign, ₱ ton $17.50@20.00
Barytes Amer. floated ..... 16.00@17.00
Barytes, Crude, No. 1 ..... 10.00@11.00
Chalk, in bulk ..... ₱ ton 3.00@ 3.25
Chalk, in bbls ..... ₱ 100 ℔ @ 35
China Clay, English ..... ₱ ton 12.00@17.00
Cobalt, Oxide ..... ₱ 100 ℔ 2.50@ ....
Whiting, Common ..... ₱ 100 ℔ .45@ .48
Whiting, Gilders ..... .55@ .57
Whiting, extra Gilders' ..... .58@ .60

Putty.
In bladders ..... 1¼@2
In bulk ..... 1 @1¼
In cans 1 ℔ to 5 ℔ ..... 2¾@4
In cans 12½ ℔ to 25 ℔ ..... 1¾@2

Spirits Turpentine.
In Oil bbls ..... 55 @55¼
In machine bbls ..... 55½@56

Glue.
Cabinet ..... ₱ ℔ 11 @15
Common Bone ..... 6 @ 8
Extra White ..... 18 @24
Foot Stock, White ..... 11 @14
Foot stock, Brown ..... 7 @10
German Hides ..... 12 @18
French ..... 10 @40
Irish ..... 13 @16
Low Grade ..... 8 @11
Medium White ..... 14 @17

Gum Shellac— Cts. per lb.
Bleached, Commercial ..... 29½@..
Bone Dried ..... 54 @..
Button ..... 45 @60
Diamond I ..... 60 @..
Fine Orange ..... 52 @54
A. C. Garnet ..... 46 @..
D. C ..... 58 @..
Octagon B ..... 54 @55
T. N ..... 47 @48
V. S. O ..... 58 @59

Animal, Fish and Vegetable Oils.
Linseed, City, raw ..... ₱ gal. 43 @44
Linseed, City, boiled ..... 45 @46
Linseed, State and West'n, raw 41 @42
Linseed, raw Calcutta seed ..... @65
Lard, Prime, Winter ..... 58 @59
Lard, Extra No. 1 ..... 47 @48
Lard, No. 2 ..... 36 @38
Cotton-seed, Crude, f.o.b mills 22½@23½
Cotton-seed, Summer Yellow, prime ..... 29½@30
Cotton-seed Summer Yellow, off grades ..... @ ..
Sperm, Crude ..... @55
Sperm, Natural Spring ..... 56 @57
Sperm, Bleached Spring ..... 59 @60
Sperm, Natural Winter ..... 57 @58
Sperm, Bleached Winter ..... 60 @61
Tallow, Prime ..... 48 @49
Whale, Crude ..... @..
Whale, Natural Winter ..... 44 @45
Whale Bleached Winter ..... 46 @47
Menhaden, Brown, Strained ..... 29 @30
Menhaden, Light Strained ..... 30 @31
Menhaden, Bleached Winter ..... 32 @33
Menhaden, Ex. Bleached Winter 34 @35
Menhaden, Southern ..... 20 @..
Cocoanut, Ceylon ..... 6½@ 7
Cocoanut, Cochin ..... 6¾@ 7½
Cod, Domestic ..... 33 @34
Cod, Newfoundland ..... 37 @..
Red Elaine ..... 30 @32
Red Saponified ..... ₱ ℔ 4½@ 5
Olive, Italian, bbls ..... 51 @ 53
Neatsfoot prime ..... 50 @ 51
Palm, prime, Lagos ..... ₱ ℔ 5¾@ 6

Mineral Oils.
Black, 20 gravity, 25@30 cold test ..... ₱ gal. 11 @12
Black, 29 gravity, 15 cold test. 12 @13
Black, Summer ..... 11 @12
Cylinder, light filtered ..... 18½@19½
Cylinder, dark filtered ..... 14½@17½
Paraffine, 903-907 gravity ..... 13 @13½
Paraffine, 903 gravity ..... 12 @12½
Paraffine, 883 gravity ..... 9½@10
Paraffine, red ..... 12 @13½
In small lots ½¢ advance.

For the Table of "Current Metal Prices" see the First Issue of Every Month.

LB My '05

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